

CHEMICAL HERITAGE FOUNDATION

**BEVERLY M. EMERSON**

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview  
Conducted by

Neil D. Hathaway

at

Salk Institute for Biological Studies  
La Jolla, California

on

16, 18, 21 December 1992 and 28 January 1993

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

## ACKNOWLEDGEMENT

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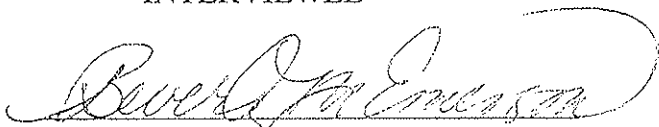
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The Salk Institute for Biological Studies  
P. O. Box 85800  
San Diego, California 92186-5800

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

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THE REGENTS OF THE UNIVERSITY  
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Beverly M. Emerson  
The Salk Institute for Biological Studies  
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## BEVERLY M. EMERSON

1952 Born in Eugene, Oregon on 18 January

### Education

1975 B.A., Biology, University of California, San Diego

1981 Ph.D., Molecular Biology, Washington University School of Medicine

### Professional Experience

1981-1986 National Institute of Arthritis, Diabetes, and Digestive and  
Kidney Disease  
Staff Fellow, Section on Physical Chemistry, Laboratory of  
Molecular Biology

1986-present Salk Institute for Biological Studies  
Associate Professor, Regulatory Biology Laboratory

### Honors

1972-1973 University of California Education Abroad Program award to study in  
Great Britain

1981-1986 National Institutes of Health Staff fellowship

1988-1992 Pew Scholars Award in the Biomedical Sciences

### Selected Publications

- Emerson, B.M. and R.G. Roeder, 1984. Isolation and genomic arrangement of active and inactive forms of mammalian 5SRNA genes. *Journal of Biological Chemistry*, 259:7916-25.
- Emerson, B.M. and R.G. Roeder, 1984. DNA sequences and transcription factor interactions of active and inactive forms of mammalian 5SRNA genes. *Journal of Biological Chemistry*, 259:7926-35.
- Emerson, B.M. and G. Felsenfeld, 1984. Specific factor conferring nuclease hypersensitivity at the 5' end of the chicken adult  $\beta$ -globin gene. *Proceedings of the National Academy of Sciences USA*, 81:95-99.
- Emerson, B.M. et al., 1985. Interaction of specific nuclear factors with the nuclease hypersensitive region of the chicken adult  $\beta$ -globin gene: Nature of the binding domain.



- Cell*, 41:21-30.
- Emerson, B.M. et al., 1987. Analysis of the tissue-specific enhancer at the 3' end of the chicken adult  $\beta$ -globin gene. *Proceedings of the National Academy of Sciences USA*, 84:4786-90.
- Emerson, B.M. et al., 1989. Erythroid-specific activation and depression of the chicken  $\beta$ -globin promoter *in vitro*. *Cell*, 57:1189-1200.
- Fong, T.C. and B.M. Emerson, 1992. The erythroid-specific protein cGATA-1 mediates distal enhancer activity through a specialized  $\beta$ -globin TATA box. *Genes and Development*, 6:521-32.
- Emerson, B.M., "Gene Expression in Hematopoietic Cells: The  $\beta$ -globin Gene." In *Gene Expression: General and Cell-Type Specific*, ed. Michael Karin (Boston: Birkhauser Press, 1993), pp. 116-61.

## ABSTRACT

**Beverly M. Emerson** was born in Eugene, Oregon, and spent much of her childhood there. She was the only child of her two parents, but her father had three children by a previous marriage. Her parents divorced when she was young, and her mother began travelling, settling in San Francisco for a month or two at a time and then returning to Eugene. Beverly missed a great deal of school, but she educated herself by reading. Although she herself had not finished high school, Beverly's mother emphasized to Beverly the importance of college education, and insisted that the University of Oregon was not good enough for Beverly. Somehow able to support them both, Beverly's mother sent Beverly to La Châtelainie Institute in Neuchâtel, Switzerland, for a year. Beverly's early school experiences did not instill academic diligence, and Beverly's grades were only average.

Fortunately, her test scores were good, and she matriculated into the University of California, San Diego, where at last she discovered a love of learning, especially in science. During college Beverly spent a year studying at St. Andrews in Scotland, and when she came back her academic ambitions were well established. She worked in Donald Helinski's and Peter Geiduschek's labs; the latter became her mentor and template for a scientist, and she continues to have a professional relationship with him still. She admired him so much that when she graduated she spent a year working as a technician in Geiduschek's lab.

Deciding to attend graduate school at Washington University in St. Louis, Beverly began working in Robert Roeder's lab. Her project caused her some difficulties she could not solve until a guest speaker, Shirley Tilghman, pointed out something to her. When she finished her PhD, she decided to accept a postdoc in Gary Felsenfeld's lab at the National Institutes of Health; there she began the transcription research that she has continued ever since. Although she began her current work in Felsenfeld's lab, that work has branched off from his area; she is concentrating on  $\beta$ -globin and chromatin. Beverly has her own lab now at the Salk Institute for Biological Sciences. She foresees herself continuing this same work until the end of her career, quite possibly at the Salk.

In addition to explaining her work, Beverly discussed protein purification, gene cloning, gene transcription, transcription factors, TATA boxes, chromatin structure, the construction of an *in vitro* transcription system, the locus control region, the Salk Institute, her Frog Room, and the status of women in scientific research.

## UCLA INTERVIEW HISTORY

### INTERVIEWER:

Neil D. Hathaway, Interviewer, UCLA Oral History Program. B.A., English and History, Georgetown University; M.A. and C.Phil., History, UCLA.

### TIME AND SETTING OF INTERVIEW:

**Place:** Salk Institute for Biological Studies, La Jolla, California.

**Dates, length of sessions:** December 16, 1992 (82 minutes); December 18, 1992 (80); December 21, 1992 (84); January 28, 1993 (201).

**Total number of recorded hours:** 7.5

**Persons present during interview:** Emerson and Hathaway.

### 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 five-year Pew scholarships, from 1988 through 1992.

In preparing for this interview, Hathaway, in consultation with the director of the UCLA Oral History Program and three UCLA faculty project consultants, developed a topic outline to provide an overall interview framework. Hathaway then held an in-person preinterview conversation with Emerson to obtain extensive written background information (curriculum vitae, copies of published articles, etc.) and agree on a research and interviewing timetable. Hathaway further reviewed the documentation in Emerson's file at the Pew Scholars Program office in San Francisco, including her proposal application, letters of recommendation, and reviews by Pew Scholars Program board members.

In addition to reading all of Emerson's published works, Hathaway surveyed recent articles on gene transcription in the scientific literature. For general background on the recent history of the biological sciences, Hathaway consulted such works as J.D. Watson et al., *The Molecular Biology of the Gene*. 4th ed. 2 vols. Menlo Park, CA: Benjamin/Cummings, 1987; Lubert Stryer, *Biochemistry*, 3d ed. New York: W.H. Freeman, 1988; *Journal of the History of Biology*; and H.F. Judson, *The Eighth Day of Creation: Makers of the Revolution in Biology*. New York: Simon and Schuster, 1979.

The interview is organized chronologically, beginning with Emerson's childhood in Eugene, Oregon, and her undergraduate education at University of California, San Diego, and continuing through her graduate education at Washington University School of Medicine, her years as a staff fellow at the National Institutes of Health, and the creation of her own lab at the Salk Institute for Biological Studies. Major topics discussed include protein purification gene

cloning, gene transcription, transcription factors, TATA boxes, chromatin structure, the construction of an in vitro transcription system, the locus control region, the Salk Institute, and the status of women in scientific research.

#### ORIGINAL EDITING:

Steven J. Novak, editor, 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.

Emerson reviewed the transcript. She verified proper names and made a number of corrections and additions.

Novak also prepared the table of contents, biographical summary, interview history, and index.

## TABLE OF CONTENTS

Early Years	1
<p>Childhood spent moving many places with her mother, but always returning to Eugene, Oregon. Missed significant amounts of school. Educated herself through reading and other solitary pursuits. Education always stressed as important. Spent a year of high school at the La Châtelainie school in Neuchâtel, Switzerland.</p>	
College Years	10
<p>Matriculated at the University of California, San Diego. Excited about educational possibilities, but not particularly science. Year abroad at the University of Saint Andrews in Scotland. Interests in science blossomed after that period. Undergraduate research with Professors Donald R. Helinski and E. Peter Geiduschek. University of Saint Andrews. Anti-American sentiment. Social life. Geiduschek's technician after graduation.</p>	
Graduate School	37
<p>Enters Washington University in St. Louis, Robert G. Roeder's laboratory. Women in science. Geiduschek's mentoring. Shirley M. Tilghman's help with research. Difficulties in Roeder's lab due to her project. Learned scientific perseverance through him.</p>	
Postgraduate Years	94
<p>Gary Felsenfeld's laboratory at the National Institutes of Science. <math>\beta</math>-globin system. Difficult project because the risk sounded interesting. Major topics discussed include protein purification gene cloning, gene transcription, transcription factors, TATA boxes, chromatin structure, the construction of an <i>in vitro</i> transcription system, the locus control region, the Salk Institute, and the status of women in scientific research.</p>	
Principal Investigator Years	113
<p>Accepts position at Salk Institute for Biological Studies. How her earlier research has led to her current work with chromatin. Other laboratories' transcription work. Laboratory management. Frog room. Funding and policy issues. Tenure. Publication record. Quality of different journals. How her research hopes to answer larger questions about mechanism of gene expression. Darwinian Evolution. British science versus American science. Scientific motivations. Nobel Prize prospects. Commitment to work.</p>	
Index	225

## INDEX

- 2  
2-D gel electrophoresis, 23  
5  
5S ribosomal genes, 57, 58, 60, 63, 64, 65
- A**  
Africa, 200, 201, 202  
Aristotle, 172  
autoradiograms, 63, 96
- B**  
bacteriophage T4, 37  
Bagga, Rajesh, 127, 128, 159, 169  
Barton, Michelle Craig, 166, 210, 217  
Bethesda, Maryland, 222  
biochemistry, 14, 15, 30, 49, 53, 168, 209  
biology, 11, 14, 15, 16, 28, 30, 32, 46, 65, 66, 93, 122, 126, 149, 167, 169, 172, 173, 174, 175, 177, 180, 189, 193, 198, 199, 201, 202, 218, 219  
biomedical research, 28  
Bobbsey Twins, 5  
Bogar, Vernon, 8  
Boston, Massachusetts, 8
- C**  
calcium chloride, 20  
California, 1, 2  
Carnegie Foundation for the Advancement of Teaching, 94  
Châtelainie Institute, La, 7, 9  
chemistry, 14, 15, 16, 30, 31, 32, 43  
chemotherapy, 206  
Chicago, Illinois, 59  
China, 198, 199  
chromatin, 87, 101, 102, 103, 104, 105, 112, 113, 114, 115, 116, 117, 168, 169, 171, 180, 182, 206  
chromatin structure, 96, 97, 99, 100, 105, 212  
chromosomes, 100, 114, 186, 206  
  chromosomal domain, 212  
collaboration, 180  
Crick, Francis H.C., 168
- D**  
Darwin, Charles R., 66, 182, 184  
DNA, 16, 17, 20, 58, 60, 62, 98, 111, 113, 115, 176, 204, 205, 208, 217  
  binding domains, 117  
  competitor DNA, 98  
  DNA footprint, 62, 63, 90, 98, 99, 117  
  DNA loops, 180  
  DNA sequencing, 61  
  mutations, 204  
Dostoevsky, Fyodor, 5, 13, 43  
*Drosophila*, 67  
drug resistance, 20
- E**  
*E. coli* restriction, 58  
Eisenberg, Heini, 96  
electron microscopy, 180  
Emerson, James Homer (father), 1, 7, 8, 41, 42, 88  
Emerson, Jr, James (stepbrother), 1  
Emerson, Lois (stepsister), 1  
Emerson, Marie Farley (mother), 1, 2, 41  
Emerson, Richard (stepbrother), 1  
Engelke, David R., 63  
enhancers, 115, 157, 171, 172, 176, 179, 182, 183, 187, 205, 208, 209, 210, 212  
enzymology, 57  
erythroids, 100, 104, 109, 156, 171, 172, 179, 182, 208, 215  
eucaryotic, 17, 57  
Eugene, Oregon, 1, 2, 5, 6, 7, 8, 9, 10, 41, 42  
Evans, Ronald M., 166, 169

## F

Farley, Herbert (maternal uncle), 7  
Felsenfeld, Gary, 30, 44, 74, 77, 84, 96, 97,  
99, 100, 101, 102, 103, 104, 107, 108,  
116, 122, 155, 156, 157, 161, 162, 164,  
166, 169, 170, 171, 180, 181, 222  
Finegold, Todd, 94  
Fong, Timothy C., 111  
Forbes, Douglass J., 217  
Fox Chase Cancer Center, 121  
funding, 29, 47, 75, 86, 87, 89, 106, 117,  
118, 134, 143, 148, 153, 193, 219, 222,  
223

## G

Galas, David J., 98  
Geiduschek, E. Peter, 17, 18, 19, 22, 23, 26,  
27, 28, 34, 35, 36, 38, 39, 40, 48, 49, 72,  
79, 80, 93, 151, 162  
genes  
  gene activity, 99, 105  
  gene expression, 14, 17, 97, 104, 180,  
  183, 187, 188, 196  
  gene libraries, 67  
  gene regulation, 63, 96, 114, 115  
  gene therapy, 68, 114  
  reporter gene, 66  
   $\beta$ -globin gene, 99, 173  
genetic code, 25  
Germany, 121  
Gilbert, Walter, 61  
Glanz, Delbert E., 150  
Glaser, Luis, 74  
globin  
  chick, 178  
  human, 178  
Golomb, Miriam, 38  
Gordon Research Conferences, 82  
Groudine, Mark, 100  
Grunstein, Michael, 115

## H

Hawaii, 198  
Healy, Bernadine P., 87, 88, 120

Helinski, Donald R., 17, 18, 19, 22, 25, 35,  
36, 38, 93, 95  
Hershfield, Vickers, 18  
histones, 97, 102, 113, 116  
Hoekstra, Merl F., 204  
Hood, Leroy, 124  
Human Genome Project, 204

## I

India, 129, 130, 159  
International Chemical and Nuclear  
  Corporation, 77, 82  
Iran, 130  
Israel, 96

## J

Jaehning, Judith, 38  
Johns Hopkins University, 51  
Jones, Katherine A., 165, 168, 169

## K

Kadonaga, James T., 116  
Kingston, Robert E., 116  
Kirschner, Marc W., 217  
Knoxville, Tennessee, 2  
Kornberg, Roger D., 103, 116

## L

La Jolla, California, 168  
Laboratory of Molecular Biology, National  
  Institute of Arthritis, Diabetes, and  
  Digestive and Kidney Disease, 96  
*lac* operon, 16  
Las Vegas, Nevada, 2  
LCR. *See* locus control region  
Leder, Philip, 58  
Lee, Brenda, 45  
locus control region, 212  
Los Angeles, California, 2  
Luse, Donal S., 113

## M

Madison, Wisconsin, 10  
magnesium, 20, 107, 109, 110

Maniatis, Tom, 57, 189  
Massachusetts General Hospital, 116  
Massachusetts Institute of Technology, 78, 85  
Maxam, Allen M., 61  
membranes, 180  
Mexico, 130, 131  
microbiology, 18, 53  
Missouri, 65  
molecular biology, 11, 14, 15, 16, 17, 18, 25, 32, 118, 206  
Molecular Biology, 11  
Montminy, Marc R., 169

## N

National Endowment for the Arts, 69  
National Institutes of Health, 30, 39, 47, 75, 76, 83, 87, 96, 99, 106, 116, 117, 120, 132, 137, 138, 141, 145, 153, 188, 193, 215, 219, 222, 223  
National Science Foundation, 86, 87, 92, 94  
NCAA (National Collegiate Athletic Association), 76  
Neuchâtel, Switzerland, 9  
Neufeld, Elizabeth F., 87, 120  
New England Biolabs, 58  
New York City, New York, 65, 74, 169  
Newport, John W., 217  
Nickol, Joanne M., 102  
NIH. *See* National Institutes of Health  
Nixon, Jilby, 8  
Nobel Prize, 178, 189, 190, 191, 192  
NSF. *See* National Science Foundation  
nucleosomes, 102, 104, 113, 217  
Nüsslein-Volhard, Christiane, 121

## O

oncogenes, 68, 207  
O'Neill, Eugene, 3, 5  
Oregon, 2, 7  
Otero-Camerini, Daniel, 222

## P

patents, 178

Pennsylvania State University, 116  
Pew Scholars in the Biomedical Sciences, 28, 44, 54, 105, 109, 119, 175, 189, 190, 208, 217, 218, 222  
Philadelphia, Pennsylvania, 116  
plasmids, 17, 19, 20, 203, 204  
Polymerase II genes, 60  
Portland, Oregon, 42  
procaryotic, 16, 17  
promoters, 100, 104, 105, 113, 114, 115, 117, 157, 171, 172, 176, 180, 188, 204, 206, 209, 210, 212  
protease inhibitors, 110  
proteins  
    CREB protein, 169  
    protein binding, 62, 182  
    protein purification, 57, 58, 62, 99, 168  
Public Broadcasting Service, 201

## R

radiation, 68  
radioisotope, 90, 132  
Raskas, Herschel J., 55  
Regulatory Biology Laboratory, 35, 47, 152  
Reitman, Marc, 222  
Reno, Nevada, 2  
RNA, 57  
Rockefeller University, 116  
Roeder, Robert G., 17, 38, 39, 52, 55, 57, 59, 60, 61, 63, 65, 72, 73, 74, 76, 79, 90, 91, 96, 97, 98, 99, 106, 109, 116, 122, 155, 156, 160, 161, 162, 164, 168

## S

Sad Sack Comic Books, 2, 3  
Salk Institute for Biological Studies, 23, 29, 46, 47, 53, 78, 80, 87, 93, 95, 126, 131, 132, 134, 140, 141, 142, 143, 144, 147, 149, 152, 153, 156, 157, 160, 165, 189, 191, 193, 220  
Sambrook, Joseph, 189  
San Diego, California, 8, 10, 16, 43, 78, 169  
San Francisco, California, 2, 5, 7, 13  
San Mateo, California, 8  
Sandoz Pharmaceuticals, 149



Sanger, Frederick, 61, 90  
Schmitz, Albert, 98  
Scholastic Aptitude Tests, 159  
Scotland, 15, 16, 17, 18, 23, 30, 31, 32  
Scripps Research Institute, 87, 142, 149, 191  
Skalka, Anna M., 120  
Smithsonian Institution, 200  
Southern blot, 55  
Stanford University, 103  
steroid receptor, 66, 169  
Stinson, Carolyn, 150  
Stockholm, Sweden, 191  
Strassmann, Beverly, 199  
Swart, Gloria, 152  
Switzerland, 8, 9, 130

## T

T cell receptor gene, 176, 178, 203  
T4 transcription, 23  
TATA box, 171, 172, 176, 179, 182, 183  
taxonomy, 15  
Taylor, Elizabeth, 14  
Tennessee, 2, 42  
tenure, 48, 145, 147, 154, 160  
Thach, Robert E., 55  
Tijuana, Mexico, 33  
Tilghman, Shirley M., 58, 60, 120  
transcription, 17, 23, 36, 49, 50, 55, 57, 59, 61, 63, 64, 65, 69, 71, 77, 79, 82, 85, 87, 95, 96, 97, 99, 100, 103, 113, 114, 115, 116, 117, 156, 163, 169, 170, 171, 189, 205, 217, 218  
transcription factor, 64, 97, 98, 113, 171

## U

UCSD. *See* University of California, San Diego  
University of California, 10, 148, 149  
University of California, Berkeley, 10  
University of California, Davis, 10, 29, 30, 89, 90, 132  
University of California, Los Angeles, 10, 77, 82, 87, 119, 120  
University of California, San Diego, 8, 10,

11, 12, 14, 15, 19, 25, 28, 30, 32, 33, 34, 38, 80, 93, 116, 132, 137, 144, 147, 151, 153, 199, 217

University of California, San Francisco, 217  
University of Oregon, 9, 10  
University of Saint Andrews, 16, 30  
University of Stirling, 30  
University of Washington, 51

## V

Vanderbilt University, 51  
Verma, Inder M., 166, 167, 169  
Vietnam War, 12  
Vincenz, Claudius, 128, 178, 200

## W

Washington D.C., 96, 200  
Washington University in St. Louis, 38, 50, 54, 58, 59, 60, 71, 73, 74, 79, 120, 132  
Washington University School of Medicine, 49  
Weintraub, Harold, 100  
Wellesley, Massachusetts, 8  
Whitehead Institute for Biomedical Research, 78, 85, 87  
Wolfenbarger, Betty Farley (maternal aunt), 2  
Workman, Jerry L., 113, 116  
World War II, 1, 12  
Wu, Carl, 116  
Wu, Reen, 23

## X

*Xenopus*, 58, 60, 63, 64, 102, 113  
*Xenopus* 5S gene, 60  
*Xenopus* genes, 58  
X-ray crystallography, 180

## Y

Yale University, 51  
yeast, 65, 66, 204  
YACs (yeast artificial chromosomes), 203

**Z**

Zlokovich, Daniel, 8  
Zuker, Charles S., 123

**β**

β-globin gene, 99, 100, 102, 104, 105, 106,  
156, 171, 172, 182, 205, 208, 209, 212