### CHEMICAL HERITAGE FOUNDATION

### **ROY M. LONG**

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview Conducted by

Karen A. Frenkel

at

Medical College of Wisconsin Milwaukee, Wisconsin

on

2, 3, and 4 December 2005

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

### ACKNOWLEDGEMENT

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# Pew Scholars in the Biomedical Sciences

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### **ROY M. LONG**

### Born in Lebanon, Pennsylvania

### Education

1985 1994	<ul> <li>B. S., Pennsylvania State University</li> <li>Ph.D., Pennsylvania State University College of Medicine, Dept. of Biological Chemistry</li> </ul>	
	Professional Experience	
1994-1996	University of Massachusetts Medical Center, Worcester, Massachusetts Postdoctoral Fellow with Robert H. Singer, Department of Cell Biology	
1996-1998	Albert Einstein College of Medicine, Bronx, New York Postdoctoral Fellow with Robert H. Singer, Department of Anatomy and Structural Biology	
1998-2004 2004-present	The Medical College of Wisconsin, Milwaukee, Wisconsin Assistant Professor, Department of Microbiology and Molecular Genetics Associate Professor, Department of Microbiology and	
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Honors		
1999-2002 2000	Pew Scholars Program in the Biomedical Sciences March of Dimes Basil O'Connor Starter Research Award	

### Selected Publications

Long, R.M., Mylin, L.M. and Hopper, J.E. (1991). GAL1 1(SPT13), a transcriptional regul	ator
of diverse yeast genes, affects the phosphorylation state of GAL4, a highly specific	
transcriptional activator. Molecular and Cellular Biology 11:23 1 1-23 14.	

Mylin, L.M., Bushman, V.L., Long, R.M., Yu, X., Lebo, C.M., Blank, T.E. and Hopper, J.E. (1994). *SIP1* is a catabolite repression-specific negative regulator of *GAL* gene expression. *Genetics*. 137:689-700.

- Long, R.M. and Hopper, J.E. (1995). Genetic and carbon source regulation of phosphorylation of Sip1p, a Snf1p-associated protein involved in carbon response in *Saccharomyces cerevisiae*. *Yeast* 11:233-246.
- Long, R.M., Elliott, D.J., Stutz, F., Rosbash, M. and Singer, R.H. (1995). Spatial consequences of defective processing of specific yeast mRNAs revealed by fluorescent in situ hybridization *RNA* 1:1071-1078.
- Long, R.M., Singer, R.H., Meng, X., Gonzalez, I., Nasmyth, K. and Jansen, R.-P. (1997). Mating type switching in yeast controlled by asymmetric localization of *ASH1* mRNA. *Science* 277:383-387.
- Bertrand, B., Chartrand, P., Schaefer, M., Shenoy, S.M., Singer, R.H. and Long, R.M. (1998). Localization of *ASH1* mRNA Particles in Living Yeast. *Mol. Cell* 2:437-445.
- Chartrand, P., Meng, X-H., Singer, R.H. and Long, R.M. (1999). Structural elements required for the localization of *ASH1* mRNA and of a green fluorescent protein reporter particle *in vivo*. *Curr. Biol.* 9:333-336.
- Long, R.M., Gu, W., Lorimer, E., Singer, R.H. and Chartrand, P. (2000). She2p is a novel RNAbinding protein that recruits the Myo4p-She3p complex to *ASH1* mRNA. *EMBO J.* 19:6592-6601.
- Long, R.M., Gu, W., Meng, X.-H., Gonsalvez, G., Singer, R.H. and Chartrand, P. (2001). An exclusively nuclear RNA-binding protein affects asymmetric localization of *ASH1* mRNA and Ash1p in yeast. *J. Cell Biol.* 153:307-3 18.
- Sato, H., Frank, D.W., Hillard, C.J., Pankhaniya, R.P., Moriyama, K., Finck-Barbancon, V., Buchaklian, A., Lei, M., Long, R.M., Wiener-Kronish, J. and Sawa, T. (2003). The mechanism of action of the *Pseudomonas aeruginos*a-encoded type III cytotoxin ExoU. *EMBO J.* 22:2959-2969.
- Gonsalvez, G.B., Lehmann, K.A., Ho, D.K., Stanitsa, E.S., Williamson, J.R. and Long, R.M. (2003). RNA-protein interactions promote asymmetric sorting of the *ASH1* mRNA ribonucleoprotein complex. *RNA* 9:1383-1399.
- Gonsalvez, G.B., Little, J.L. and Long, R.M. (2004). *ASH1* mRNA anchoring requires reorganization of the Myo4p/She3p/She2p transport complex. *J. Biol. Chem.* 279:46286-46294.
- Gallas, M.R., Dienhart, M.K., Stuart, R.A. and Long, R.M. (2006). Characterization of Mmp37p, a *Saccharomyces cerevisiae* mitochondrial matrix protein with a role in mitochondrial protein import. *Mol. Biol. Cell* 17:4051-4062.
- Urbinati, C.R., Gonsalvez, G.B. Aris, J.P. and Long, R.M. (2006). Loc1p is required for efficient assembly and nuclear export of the 60S ribosomal subunit. *Mol. Genet. and Genomics* 276:369-377.
- Chartrand, P., Bertrand, E., Singer, R.H., and Long, R.M. (2000). Sensitive and high-resolution detection of RNA in situ. *Methods Enzymol.* 318:493-506.
- Chartrand, P., Singer, R.H. and Long, R.M. (2001). RNP localization and transport in yeast. *Annu. Rev. Cell Dev. Biol.* 17:297-3 10.
- Long, R.M. and McNally, M.T. (2003). mRNA decay: x(*XRN1*) marks the spot. *Mol. Cell* 11:1126-1128.
- Gonsalvez, G.B., Urbinati, C.R. and Long, R.M. (2005). RNA localization in yeast-moving towards a mechanism. *Biology of the Cell* 97:75-86.
- Urbinati, C.R. and Long, R.M. (2006). Monitoring the temporal and spatial distribution of RNA

in living cells. Methods in Mol. Biol. in preparation.

#### ABSTRACT

**Roy M. Long** grew up in Lebanon, a small town near Hershey, Pennsylvania. His father worked at the Hershey factory, his mother in a department store. Because his father worked afternoons and evenings, Long spent most of his time with his mother, older sister, and grandmother. He attended what he calls average public schools, where his performance did not live up to expectations from standardized tests. Teachers told his parents he was good in science and math, so his parents pushed him toward medicine.

Long attended Pennsylvania State University, majoring in molecular and cell biology. He made his decision to pursue scientific research rather than medicine when he took a gene expression class; then, wanting to gain lab experience to see if indeed research would be a good career for him, he worked in Ross Hardison's laboratory.

He worked for two years as a technician in Alberto Manetta's laboratory and then entered Milton S. HersheyMedical School of Pennsylvania State University for graduate study in biochemistry, where he worked in James Hopper's laboratory. Here he discusses his reasons for choosing Penn State, what the university was like; and his criteria for selecting Hopper's laboratory. He also talks about using yeast as a model system for gene regulation and expression, the running of the Hopper laboratory, and Hopper's mentoring style. He describes his graduate-school classes, his doctoral research in gene expression in Hopper's lab, and thesis defense. During this period of his life, Long also marries and has a daughter.

Long accepted a postdoctoral fellowship with Robert Singer at University of Massachusetts Medical School; there his research centered on RNA localization. He discusses Singer's mentoring style and why Singer moved his lab to Albert Einstein Medical Center, where Long did another postdoc.

Long interviewed for jobs at a number of universities and eventually chose Medical College of Wisconsin in Milwaukee, Wisconsin. He discusses the process of conducting scientific research; setting up and running his laboratory; funding; the impact of the Pew Scholars Program in the Biomedical Sciences grant on his work; and his teaching and administrative responsibilities. He continues discussing his collaborations; his laboratory management style; how he writes grants; and his view of competition in science.

Long next talks about his current research in gene expression studying the mechanisms of RNA localization in yeast; his role in the lab; and practical applications of his research. He expresses his opinion on such issues as setting the national science-funding agenda; patents; how to educate the public about science, the importance of doing so, and the scientist's role in that education; and gender and ethnic issues in science.

Long details a typical work day. He concludes by discussing his wife and daughter and explaining how he attempts to balance family and career.

#### UCLA INTERVIEW HISTORY

#### **INTERVIEWER:**

Karen A. Frenkel, Interviewer, UCLA Oral History Program; B.A., Hampshire College, 1978; M.S., Boston University, 1982.

TIME AND SETTING OF INTERVIEW:

Place: Long's office at Medical College of Wisconsin, Milwaukee, WI.

Date: December 2, 3 and 4, 2005.

**Total number of recorded hours: 5.5** 

Persons present during interview: Long and Frenkel.

#### 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, Frenkel held a telephone pre-interview conversation with Long to obtain written background information (curriculum vitae, website address, copies of published articles, etc.) and agree on an interviewing schedule. She also reviewed the documentation in Long'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 edited for punctuation, paragraphing, and spelling, and verified proper names. Words and phrases inserted by the editor have been bracketed.

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

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