CHEMICAL HERITAGE FOUNDATION

KEN A. DILL

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Robert Kohler, Naomi Morrissette, and Hilary L. Domush

at

The University of California, San Francisco
San Francisco, California

on

12 December 1989 and 9 and 10 February 2009

(With Subsequent Corrections and Additions)

ACKNOWLEDGMENT

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KEN A. DILL

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KEN A. DILL

1947	Born in Oklahoma City, Oklahoma, December 11

Education

1971	BS, Massachusetts Institute of Technology, Mechanical Engineering
1978	PhD, University of California, San Diego, Biology

Professional Experience

	Stanford University
1978-1981	Postdoctorate, Chemistry under Paul J. Flory
	University of Florida, Gainesville
1981-1982	Assistant Professor, Chemistry
	University of California, San Francisco
1982-1985	Assistant Professor, Chemistry
1985-1989	Associate Professor, Pharmaceutical Chemistry
1989-2010	Professor, Pharmaceutical Chemistry, Biochemistry/Biophysics, Biopharmaceutics
2010	Distinguished Professor, Pharmaceutical Chemistry, Biochemistry/Biophysics, Biopharmaceutics
	University of Utah
1985-1989	Associate Adjunct Professor, Pharmaceutics
1989-2007	Adjunct Professor, Pharmaceutics
	Lawrence Berkeley National Lab
1996-present	Faculty Biochemist
	Stony Brook University
2011	Louis and Beatrice Endowed Chair of Physical and Quantitative Biology
2011	Director, Laufer Center for Physical and Quantitative Biology

Honors

1971-1974	National Science Foundation Pre-doctoral Fellowship
1979-1980	Damon Runyon-Walter Winchell Postdoctoral Fellowship

1985-1989	Pew Biomedical Scholar
1987	Distinguished Teaching Award (UCSF) Academic Senate
1987	Joseph M. Long Foundation Prize for Excellence in Teaching (UCSF,
1991	Elected Fellow, American Physical Society
1997	Elected Fellow, AAAS
1998	Hans Neurath Award, Protein Society
2002	Elected Fellow, Biophysical Society
2004	Elected Fellow, Institute of Physics
2007	Distinguished Service Award, Biophysical Society
2008	Elected Member, National Academy of Sciences
2010	UCSF 53rd Faculty Research Lecturer
2012	Emily Gray Award, Biophysical Society
2012	Appointed Distinguished Professor, SUNY
2013	Elected member, American Academy of Arts and Sciences

ABSTRACT

Ken A. Dill grew up in Oklahoma City, Oklahoma, one of two children. His father was an engineer for the telephone company and his mother a housewife. Having displayed an early interest in electronics, Dill attended Massachusetts Institute of Technology (MIT), obtaining a bachelor's degree in mechanical engineering and a master's degree in bioengineering. His master's degree experience convinced him he wanted to do research so he applied for and received a National Science Foundation (NSF) grant and matriculated at the University of California, San Diego. Rotations there gave him an interest in questions about the origins of life. He settled in Bruno Zimm's lab because he liked Zimm's personality and his bio-related physics lab. Dill finished his PhD when he got reproducible results with the DNA separator he had designed and built. He went next to a postdoc at Stanford University, to Paul Flory's lab to study micelles, hoping that their simpler structures would help him understand the more complex structures of proteins. Dill says that Flory "thought like molecules do."

Dill accepted an assistant professorship at the University of Florida, where he worked on protein folding, molecular evolution, and the origins of life. Although he liked Florida, Dill left there for the University of California, San Francisco (UCSF), where there were many more groups doing similar work. At the beginning of Dill's career Cyrus Levinthal declared that learning how sequence determines structure was the grand challenge in their field; Dill published his paper using polymer statistical mechanics to postulate that requirements for compactness limited proteins' structures. Others questioned the use of statistical mechanics for thinking about proteins, but Dill developed simple exact models, especially the hydrophobic-polar model. He also developed funnel-shaped energy landscapes.

Dill moved to studying peptoids, or artificial molecules, collaborating with Ronald Zuckermann, to see if they could make the peptoids fold the way proteins do. They called these folding peptoids foldamers and believe that foldamers could have many important biological applications. Dill's lab now works in three main project areas: computer modeling of structures; water; and nonequilibrium statistical mechanics. Dill's work was originally funded by Pew Scholars Program in the Biomedical Sciences but has since been supported by NIH. He still loves to work with pencil and paper.

Wanting to contribute to science policy, Dill cofounded, with Mary Barkley, the Bridging the Sciences Coalition, which is composed of fifteen basic research organizations. Dill discusses Representative John Porter's help with legislation and procedures; the Coalition's white papers; Congress's responsiveness; and the importance of a large vision for science. He believes deep innovation is important for the future of science. He points out some other countries' approaches to science policy and stresses the importance of public outreach.

Dill shares thoughts on science education and grant reviewing. At the time of the second interview Dill had just been elected to the National Academy of Sciences and had yet to attend the inauguration.

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