

CHEMICAL HERITAGE FOUNDATION

PETER G. GILLESPIE

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

Helene L. Cohen

at

Oregon Health and Science University
Portland, Oregon

on

1-3 August 2001

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



Peter G. Gillespie

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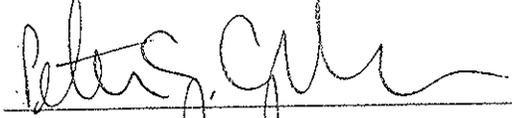
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(Signature)

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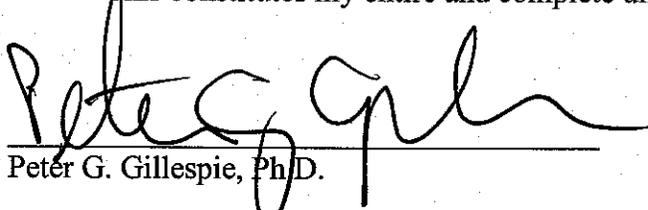
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PETER G. GILLESPIE

1958 Born in Seattle, Washington, on May 6

Education

1981 B.A., Chemistry, Reed College
1988 Ph.D., Pharmacology, University of Washington

Professional Experience

1988-1989 University of California, San Francisco
Postdoctoral Fellow, Department of Physiology

1989-1993 University of Texas Southwestern Medical Center, Dallas, Texas
Postdoctoral Fellow, Department of Cell Biology
and Neuroscience

1993-1998 Johns Hopkins University
Assistant Professor, Department of Physiology
1998-1999 Associate Professor, Department of Physiology

1999-present Oregon Health and Science University, Portland, Oregon
Associate Professor, Oregon Hearing Research Center
1999-present Affiliated Scientist, Vollum Institute
2000-present Co-director, Graduate Neuroscience Program

Honors

1994-1998 Pew Scholars Program in the Biomedical Sciences Grant

Selected Publications

- P.G. Gillespie and J.A. Beavo, 1988. Characterization of the cone photoreceptor phosphodiesterase purified by the cGMP-Sepharose chromatography. *J.Biol.Chem.* 263:8133-41.
- P.G. Gillespie and A.J. Hudspeth, 1991. High-purity isolation of bullfrog hair bundles and subcellular and topological localization of constituent proteins. *J.Cell.Biol.* 112:625-40.
- P.G. Gillespie et al., 1993. Identification of a 120-kD hair-bundle myosin I located near stereociliary tips. *Neuron* 11:581-94.

- E.N. Yamoah and P.G. Gillespie, 1996. Phosphate analogs block adaptation in hair cells by inhibiting adaptation-motor force production. *Neuron* 17:523-33.
- Y.-D. Zhao et al. 1996. Regeneration of broken tip links and restoration of mechano-electrical transduction in hair cells. *Proc.Natl.Acad. USA* 93:15469-74.
- P.G. Gillespie et al., 1997. Unconventional myosins in inner-ear sensory epithelia. *J.Cell.Biol.* 137:1287-1307.
- P.G. Gillespie et al., 1998. Plasma-membrane Ca^{2+} -ATPase extrudes Ca^{2+} from hair-cell stereocilia. *J.Neurosci.* 18:610-24.
- P.G. Gillespie et al. , 1999. Engineering of the myosin-I β nucleotide-binding pocket to create selective sensitivity to N⁶-modified ADP analogs. *J.Biol.Chem.* 274:31373-81.
- P.G. Gillespie et al., 2000. Helical structure of hair-cell tip links revealed by freeze-etch microscopy. *Proc.Natl.Acad.Sci. USA* 97:13336-41.
- P.G. Gillespie et al., 2001. PMCA2a is the plasma-membrane Ca^{2+} -ATPase of hair bundles. *J.Neurosci.* 21:5066-78.
- P.G. Gillespie et al., 2002. A chemical-genetic strategy demonstrates myosin-1c participates in adaptation by hair cells. *Cell* 108:371-81.
- J. Cyr, R. Dumont and P.G. Gillespie. Myosin-1c interacts with hair-cell receptors through calmodulin-binding IQ domains. *J.Neurosci.*, in press, 2002.

ABSTRACT

Peter G. Gillespie was born in Seattle, Washington in 1958; the elder of two brothers. Both Gillespie's mother, who came from Idaho, and his father, who came from Washington, attended Reed College in Portland, Oregon, where they were mathematics majors. His father worked for several computer companies during the early days of the industry. Gillespie was an avid reader of books throughout his youth; he also became very involved in outdoor activities such as bicycling, hiking, and rock-climbing. He credits his love of the outdoors and some important high school influences for his love of the sciences.

Gillespie received his Bachelor of Arts in chemistry from Reed College in 1981. Initially he struggled with the course load at Reed and contemplated alternative career paths. It was during his fellowship studying photoreceptors at the Neurological Science Institute that he became interested in neuroscience. Following graduation he worked for two years as a lab technician and decided to apply to graduate school. Gillespie matriculated into the Graduate Pharmacology Program at the University of Washington, where he did his research in Joseph A. Beavo's lab. He received his Ph.D. in 1988. He also met and married his wife, Susan K.H. Gillespie, when he was a graduate student. Gillespie accepted a postdoctoral position at the University of California, San Francisco in James Hudspeth's lab only to have to move with Hudspeth a year later to his new lab at the University of Texas Southwest in Dallas, Texas. With Hudspeth, Gillespie began to focus his research on the molecular characterization of auditory hair cells.

In 1993 Gillespie was appointed Assistant Professor in the Physiology Department at Johns Hopkins University, which was under new leadership. Unfortunately, after several years the program was not achieving the goals for which Gillespie had hoped; as a result he opted in 1999 to accept a position as an associate professor at the Oregon Health and Science University in Portland, Oregon. Gillespie now carries out his research at the Vollum Institute, where he studies auditory hair cell signal transduction and the implications of different myosin isozymes on this complex physiological process.

Throughout the oral history Gillespie emphasizes the importance of keeping experiments simple and sharing all scientific discovery. Gillespie has won several awards, including a postdoctoral fellowship, NIH grants, and the Pew Scholars Program in the Biomedical Sciences grant that he discusses in the oral history.

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: Gillespie's office, Oregon Hearing Research Center, Oregon Health and Science University.

Dates, length of sessions: August 1, 2001 (108 minutes); August 2, 2001 (128); August 3, 2001 (125).

Total number of recorded hours: 6.17

Persons present during interview: Gillespie 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' 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 Gillespie 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 Gillespie'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 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 Gillespie's childhood in Seattle, Washington, and continuing through his undergraduate work at Reed College, his graduate work at University of Washington, his postdocs at University of California, Berkeley, and University of Texas Southwestern Medical Center, and the establishment of his own labs, first at Johns Hopkins University and then at Oregon Health Sciences University. Major topics discussed include his research in the A. James Hudspeth laboratory,

his current research in hair cell transduction and in myosin-1c binding partners, and his position at Oregon Health Sciences University.

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.

Gillespie reviewed the transcript. He verified proper names and made minor corrections and additions.

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

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