

CHEMICAL HERITAGE FOUNDATION

PHILIP B. WEDEGAERTNER

The Pew Scholars Program in the Biomedical Sciences

Transcript of an Interview
Conducted by

William Van Benschoten

at

Thomas Jefferson University
Philadelphia, Pennsylvania

on

8, 10, and 11 June 2003

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

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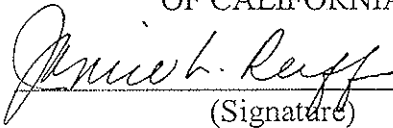
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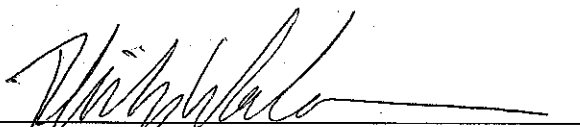
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1997-2001 Pew Scholars Program in the Biomedical Sciences Grant
1999-2001 W.W. Smith Charitable Trusts grant for Cancer Research

Selected Publications

Evanko, D.S., Thiyagarajan, M.M., Takida, S., and Wedegaertner, P.B. (2005) Loss of association between activated Gαq and GJ31 disrupts receptor-dependent and receptor-independent signaling, *Cellular Signaling*, in press.

Grabocka, E. and Wedegaertner, P.B. (2005) Functional consequences of Gα13 mutations that disrupt interaction with p115RhoGEF, *Oncogene*, in press.

- Takida, S., Fischer, C.C., and Wedegaertner, P.B. (2005) Palmitoylation and plasma membrane targeting of RGS7 are promoted by ao, *Mol. Pharm.*, 67, 132-139.
- Day, P.W., Tesmer, J.J.G., Sterne-Marr, R., Benovic, J.L., and Wedegaertner, P.B. (2004) Characterization of the GRK2 binding site of Gαq, *J. Biol. Chem.*, 279, 53643-53652.
- Takida, S. and Wedegaertner, P.B. (2004) Exocytic pathway-independent plasma membrane targeting of heterotrimeric G proteins, *FEBS Lett.*, 567, 209- 213.
- Thiyagarajan, M.M., Stracquatano, R.P., Pronin, A.N., Evanko, D.S., Benovic, J.L., and Wedegaertner, P.B. (2004) A predicted amphipathic helix mediates plasma membrane localization of GRK5, *J. Biol. Chem.*, 279, 17989- 17995.
- Banerjee, J. and Wedegaertner, P.B. (2004) Identification of a novel sequence in PDZ-RhoGEF that mediates interaction with the actin cytoskeleton, *Mol. Biol. Cell*, 15, 1760-1775.
- Day, P.W., Carman, C.V., Sterne-Marr, R., Benovic, J.L., and Wedegaertner, P.B. (2003) Differential interaction of GRK2 with members of the Gαq family, *Biochemistry*, 42, 9176-9184.
- Takida, S. and Wedegaertner, P.B. (2003) Heterotrimer formation, together with isoprenylation, is required for plasma membrane targeting of GJ31, *J. Biol. Chem.*, 278, 17284-17290.
- Bhattacharyya, R. and Wedegaertner, P.B. (2003) Characterization of Gα13-dependent plasma membrane recruitment of p1 15RhoGEF, *Biochem. J.*, 371, 709-720.
- Bhattacharyya, R. and Wedegaertner, P.B. (2003) Mutation of an N-terminal acidic-rich region of p1 15RhoGEF dissociates α13 binding and α13-promoted plasma membrane recruitment, *FEBS Lett.*, 540, 211-216.
- Sterne-Marr, R., Tesmer, J.J.G., Day, P.W., Stracquatano, R.P., Cliente, J.E., O'Connor, K.E., Pronin, A.N., Benovic, J.L., and Wedegaertner, P.B. (2003) GRK2/Gαq/11 interaction: A novel surface on an RGS homology domain for binding Gα subunits, *J. Biol. Chem.*, 278, 6050-6058.
- Thiyagarajan, M.M., Bigras, E., Van Tol, H.H.M., Hébert, T.E., Evanko, D.S. and Wedegaertner, P.B. (2002) Activation-induced subcellular redistribution of Gas is dependent upon its unique N-terminus, *Biochemistry*, 41, 9470-9484.
- Wedegaertner, P.B. (2002) Characterization of subcellular localization and stability of a splice variant of Gαi2, *BMC Cell Biology*, 3, 12.
- Evanko, D.S., Thiyagarajan, M.M., Siderovski, D.P., and Wedegaertner, P.B. (2001) GJ31 isoforms selectively rescue plasma membrane localization and palmitoylation of mutant Gas and Gαq, *J. Biol. Chem.* 276, 23945-23953.
- Bhattacharyya, R., and Wedegaertner, P. B. (2000) Gα13 requires palmitoylation for plasma membrane localization, rho-dependent signaling, and promotion of p1 15rhoGEF membrane binding. *J. Biol. Chem.* 275, 14992- 14999.
- Evanko, D.S., Thiyagarajan, M.M., and Wedegaertner, P.B. (2000) Interaction with GJ31 is required for membrane targeting and palmitoylation of Gas and Gαq, *J. Biol. Chem.* 275, 1327-1336.
- Carman, C.V., Parent, J.-L., Day, P.D., Pronin, A.N., Sternweis, P.M., Wedegaertner, P.B., Gilman, A.G., Benovic, J.L., and Kozasa, T. (1999) Selective regulation of Gαq/11 by an RGS domain in the G Protein-coupled receptor kinase, GRK2, *J. Biol. Chem.* 274, 34483-34492.
- Iiri, T., Backlund, P.S., Jones, T.L.Z., Wedegaertner, P.B., and Bourne, H.R. (1996) Reciprocal regulation of G_{sa} by palmitate and the fry subunit. *Proc. Natl. Acad. Sci. U.S.A.* 93, 14592-

14597.

- Wedegaertner, P.B., Bourne, H.R., and von Zastrow, M. (1996) Activation-induced subcellular redistribution of Gsa. *Mol. Biol. Cell.* 7, 1225-1233.
- Wedegaertner, P.B. and Bourne, H.R. (1994) Activation and depalmitoylation of Gsa. *Cell* 77, 1063-1070.
- Wedegaertner, P.B., Chu, D.H., Wilson, P.T., Levis, M.J. and Bourne, H.R. (1993) Palmitoylation is required for signaling functions and membrane attachment of Gqa and Gsa. *J. Biol. Chem.* 268, 25001-25008.
- Wedegaertner, P.B. and Gill, G.N. (1992) Effect of carboxyl terminal truncation on the tyrosine kinase activity of the epidermal growth factor receptor. *Arch. Biochem. Biophys.*, 292, 273-280.
- Filhol, O., Cochet, C., Wedegaertner, P.B., Gill, G.N., Chambaz, E.M. (1991) Co-expression of α and β subunits required for assembly of regulated casein kinase II. *Biochemistry*, 30, 11133-11140.
- Nishibe, S., Wahl, M.I., Wedegaertner, P.B., Kim, J.J., Rhee, S.G., Carpenter, G. (1990) Selectivity of phospholipase C phosphorylation by the epidermal growth factor receptor, the insulin receptor, and their cytoplasmic domains. *Proc. Natl. Acad. Sci. U.S.A.*, 87, 424-428.
- Wedegaertner, P.B. and Gill, G.N. (1989) Activation of the purified protein tyrosine kinase domain of the epidermal growth factor receptor. *J. Biol. Chem.*, 264, 11346-11353.

Reviews, Book Chapters, and others:

- Day, P.W., Wedegaertner, P.B., and Benovic, J.L., (2004) Analysis of G protein-coupled receptor kinase RGS homology domains, *Methods in Enzymology*, 390, 295-310.
- Wedegaertner, P.B. (2003) Reversible Palmitoylation in G-Protein Signaling, Chapter 228, in *Handbook of Cell Signaling vol. 2*, Bradshaw, R. and Dennis, E., eds., Academic Press.
- Wedegaertner, P.B. (1999) Fatty acid acylation of G protein subunits, in *G Proteins: Techniques of Analysis*, Manning, D.R., ed., pp. 153-171, CRC Press, Boca Raton, FL.
- Wedegaertner, P.B. (1998) Lipid modifications and membrane targeting of G α . *Biological Signals and Receptors*, 7, 125-135.
- Wedegaertner, P.B., Wilson, P.T. and Bourne, H.R. (1995) Lipid modifications of trimeric G proteins. *J. Biol. Chem.* 270, 503-506.
- Wedegaertner, P.B. (1991) Expression, purification, and characterization of the tyrosine kinase domain of the epidermal growth factor receptor (Thesis)

ABSTRACT

Philip B. Wedegaertner grew up in Stockton, California, the younger of two siblings. His father was an organic chemistry professor at the University of the Pacific; his mother held several part-time, volunteer positions while raising her children, though, later in life, went to college at the University of the Pacific and obtained her bachelor's degree in history. Wedegaertner enjoyed reading, playing sports (he joined the wrestling team in high school), and camping (he became an Eagle Scout in the Boy Scouts of America). He met the woman who later became his wife in high school through church activities; he always did well in school, liking mathematics and the sciences, but was unsure of what career he wanted to pursue.

He matriculated at the University of California, Davis with an undeclared major for his first two years there; subsequently he majored in biochemistry with a minor in history. During the summer of his junior year Wedegaertner worked with James W. Blankenship in the School of Pharmacy at University of the Pacific; during his senior year he worked closely with a graduate student in Donald M. Carlson's laboratory on various independent projects. After completing his undergraduate degree, Wedegaertner decided to remain on the West Coast and pursue graduate work in biochemistry at the University of California, San Diego. There he worked with Gordon N. Gill—after developing an interest in signal transduction—synthesizing and characterizing the tyrosine kinase domain of the epidermal growth factor receptor. Wedegaertner then decided to go abroad and took a short-term postdoctoral fellowship with Claude Cochet, who had worked with Gill, in Grenoble, France; then he returned to the United States and studied with Henry R. Bourne at the University of California, San Francisco, focusing on lipid modifications of G proteins. At the end of his postdoctoral studies, Wedegaertner accepted a position at Thomas Jefferson University in Philadelphia, Pennsylvania, continuing work on G proteins.

Throughout the end of the interview he speaks about the process of writing journal articles in the various labs in which he worked, and in his own; how he balances his family life and career; the issue of patents; and the qualities of a good scientist. The interview ends with Wedegaertner's thoughts on the history of science; tenure at Thomas Jefferson University; competition and collaboration in science; the national scientific agenda; the privatization of scientific research; the impact of the Pew Scholars Program in the Biomedical Sciences on his work; and lessons learned in becoming a principal investigator.

UCLA INTERVIEW HISTORY

INTERVIEWER:

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TIME AND SETTING OF INTERVIEW:

Place: Wedegaertner's office, Thomas Jefferson University.

Dates, length of sessions: June 8, 2003; June 10, 2003; and June 11, 2003.

Total number of recorded hours: 6.0

Persons present during interview: Wedegaertner and Van Benschoten.

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, Van Benschoten held a telephone preinterview conversation with Wedegaertner to obtain written background information (curriculum vitae, copies of published articles, etc.) and agree on an interviewing schedule. He also reviewed documentation in Wedegaertner's file at the Pew Scholars Program office in San Francisco, including Wedegaertner's proposal application, letters of recommendation, and reviews by Pew Scholars Program national advisory committee members.

ORIGINAL EDITING:

Carol Squires 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.

Wedegaertner did review the transcript. He verified proper names and made minor corrections and additions.

Carol Squires prepared the table of contents and compiled the guide to proper names.

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