George M. Carman, Ph.D.

Board of Governors Professor &
Distinguished Professor of Food Science
Director, Rutgers Center for Lipid Research,
New Jersey Institute for Food, Nutrition, &
Health

61 Dudley Road
New Brunswick, NJ 08901-8520
Tel: 848-932-0267
Email: gcarman@rutgers.edu
http://foodsci.rutgers.edu/carman

CURRICULUM VITAE

Education

Ph.D., Food Biochemistry, University of Massachusetts, 1977
M.S., Microbiology, Seton Hall University, 1974
B.A., Biology (with honors), William Paterson University, 1972

Appointments

Chief Scientific Officer, New Jersey Institute for Food, Nutrition, & Health, 2014-2017
Director, Rutgers Center for Lipid Research, Rutgers University, 2007-present
Board of Governors Professor, Rutgers University, 2011-present
Distinguished Professor, Department of Food Science, Rutgers University, 1990-present
Visiting Professor, Department of Molecular Biology, Princeton University, 1990-1991
Professor, Department of Food Science, Rutgers University, 1986-1990
Associate Professor, Department of Food Science, Rutgers University, 1982-1986
Assistant Professor, Department of Food Science, Rutgers University, 1978-1982
Postdoctoral Research Fellow, Department of Biochemistry and Molecular Biology, University of Texas Medical School, Houston, 1977-1978

Research Areas

Biochemistry and molecular biology of phospholipid metabolism and lipid signaling

Professional Affiliations

American Society for *Biochemistry* and Molecular Biology, American Oil Chemists' Society, American Society for Microbiology, American Chemical Society

Honors

Distinguished Scientist Award, Rutgers University Food Science Alumni Committee (2016)
Chancellor's Award Lectureship in Neuroscience, Louisiana State University School of Medicine (2016)
Journal of Lipid Research Lectureship Award (2014)
Avanti Award in Lipids, American Society for Biochemistry and Molecular Biology (2012)
MERIT Award, National Institutes of Health (2010)
Research Excellence Award for Sustained Research and Impact, School of Environmental and Biological Sciences, Rutgers University, 2009
Faculty Mentor of the Year, Compact for Faculty Diversity, 2008
Merck-AAAS Speaker, Hope College, 2006
American Oil Chemists Society-Supelco/Nicholas Pelick Research Award, 2004
Endel Karmas Award for Teaching Excellence, Rutgers University, 2004, 2015
Board of Trustees Award for Excellence in Research, Rutgers University, 1999
American Academy of Microbiology Fellow, 1998
Foundation for Microbiology Lecturer, 1996-1998
Selman A. Waksman Honorary Lectureship Award, 1996
Research Excellence Award, NJ Agricultural Experiment Station, Rutgers University, 1993
Merit Awards from Rutgers University, 1981, 1983, 1985-1991, 1993, 1994, 1997-2008
Chairman, Gordon Research Conference-Molecular and Cellular Biology of Lipids, 1993
Distinguished Alumni Award from William Paterson University, 1981
Welch Foundation Postdoctoral Fellowship, 1977

Manufacturers Hanover Trust Co. Scholarship, 1968
Memberships in the American Society of Biochemistry and Molecular Biology and the Honorary Societies of Sigma Xi, Phi Tau Sigma
Rutgers Presidential Committee on Academic Planning and Review, 2008-2011
Rutgers Presidential Committee on Standards and Priorities in Academic Development, 1998-2004

Editorships

Journal of Biological Chemistry, Associate Editor, 2006-2019
Journal of Lipid Research, Associate Editor, 2003-2006, 2017-2020
Analytical Biochemistry, Executive Editor, 1994-2018
Biochimica et Biophysica Acta, Executive Editor, 2004-2006, Guest Editor, "Regulation of Lipid Metabolism in Yeast" (special issue), 2007

Editorial Boards

Journal of Biological Chemistry, Board Editor, 1998-2003, 1992-1997
Journal of Lipid Research, Board Member, 2006-2016
Journal of Bacteriology, Board Member, 1992-1994
Applied and Environmental Microbiology, Board Member, 1985-1990
Gene Regulation and Systems Biology, Board Member, 2006-2008
Journal of Food Biochemistry, Board Member, 1979-1992
Journal of Food Science, Board Member, 1985-1987
InScight, Board Member, 1998-2002

Grants

National Institutes of Health
- Phospholipid Metabolism and Membrane Function, GM028140, 1980-2020, PI
- Regulation of Phospholipid Synthesis, GM050679, 1994-2021, PI
- Regulation of Phosphatidylinositol Metabolism, GM 35655, 1986-1995, PI
- Gordon Research Conference on Lipid Metabolism, GM 49037, 1993, PI
- Liquid Chromatography Mass Spectrometry System, RR 021120, 2006, Co-PI

National Science Foundation
- Regulation of Yeast Phosphatidate Phosphatase, DCB 9204588, 1992-1995, PI
- Gordon Research Conference on Lipid Metabolism, IBN 9300895, 1993, PI

American Heart Association
- Gordon Research Conference on Lipid Metabolism, 1993, PI

United States Department of the Army
- Gordon Research Conference on Lipid Metabolism, 1993, PI

United States Department of Agriculture
- Determination of Phosphatidylcholine by Enzymatic Analysis, 1980, PI

Universal Foods Corporation
- Biochemistry of Yeast Cell Membranes, 1980-1984, PI

General Foods Fund
- Reduction of Linolenic Acid from Soybean Oil, 1979-1981, PI

Mobil Oil Foundation
- Enzyme Research Project, 1981-1982, PI

Review Panels

National Institutes of Health
- Biochemistry and Biophysics of Membranes Study Section, Member, 2011-2015
- Biological Chemistry and Macromolecular Biophysics Study Section, Ad Hoc Member, 2010 (Chair), 2009, 2008 (Chair), 2006
- Chemistry and Related Sciences Special Emphasis Panel, 1998, 2004

Physiological Chemistry Study Section, Member, 1988-1992, 1998-2002
Physiological Chemistry Study Section, Ad Hoc Member, 1984, 1986, 1987
Reviewers Reserve, 1992-1996
Special Topics in Biological Sciences Study Section, Chair, 2008
Study Section Boundaries Team (for Biological Chemistry and Macromolecular Biophysics Integrated Review Groups), 2003

National Science Foundation: Review Panel for Research Experiences for Undergraduates, 1987

Biotechnology and Biological Sciences Research Council of Scotland, Hannah Research Institute Visiting Group, 1999

Medical University of South Carolina, Department of Biochemistry and Molecular Biology, External Advisory Board, Chair, 2002, 2005

University of Massachusetts, Food Microbiology Review Committee, 1980

Meeting Committees

American Society for Biochemistry and Molecular Biology
Search Committee, JBC Editor-in-Chief, Member, 2015-2016
Annual Meeting Program Planning Committee, Co-chair, 2006, 2001, Member, 1998, 2002-2004
Lipid Research Division, Director, 2017-present, Steering Committee, 2010-2017
Meetings Committee, 2001-2004, Chair, 2002-2004
National Council, 2000-2001, 2002-2006
Strategic Plan Retreat, 2000
Satellite Meeting “Membrane Lipids and Cell Function,” Co-organizer, 2001
Satellite Meeting “Molecular Characterization of Membrane Lipid Metabolism,” Co-organizer, 1998
Theme Meeting “Biochemistry and Molecular Biology of Lipids,” Co-organizer, 2006

Federation of American Societies for Experimental Biology (FASEB)
Experimental Biology Executive Board, 2005-2008
FASEB Summer Research Conferences Advisory Committee, 2003-2009
FASEB Science Research Conference, “Phospholipid Cell Signaling and Metabolism in Inflammation and Cancer, Co-organizer, 2014

Gordon Research Conference-Molecular and Cellular Biology of Lipids
Chair, 1993, Advisory Committee, 1993-present

International Conference on the Bioscience of Lipids, Steering Committee, 2010-2013

Keystone Symposia, “Cell Activation and Signal Transduction: Lipid Second Messengers IV,” Organizer, 2000

Institute of Food Technologists
Annual Meeting Program Committee, 1981-1984
Chairperson to Scientific Sessions of Annual Meetings 1982, 1983
NY Section, Seminar Chair, 1984-1985

Phi Tau Sigma, President of Rutgers University Chapter, 1979-1981

Theobald Smith Society, NJ Branch of the American Society for Microbiology
President, 1997-1998, President Elect and Program Chair, 1996-1997
Local Councilor, 1994-1996
Waksman Award Committee, 1999-2001, Chair 2000

USDA Northeast Regional Project NE-116, Chair, 1982-1984, Secretary, 1980-1982

Yeast Lipid Conference, Steering Committee, 2005-2018.

Community Service

Cub Scouts, Troop 66, Den Leader, 1997-1999.

Boy Scouts, Troop 88, Merit badge councilor, 2007-2012, Troop committee, 2007-2013.

West Windsor Township, Basketball Coach, 1998, 1999, 2002, 2003, 2005-2007, 2012; Little League Baseball Coach, 1995, 2001, 2003, 2004, 2007; Girls Softball Coach, 2000; Swimming Official, 2002-2005.
West Windsor-Plainsboro School System, Science Inventors Judge, 1995; Math Partners, development of mathematics curriculum, 1993

Collaborators

Khosrow Adeli, Markus Aebi, Robert M. Bell, Enoch P. Baldwin, Kendall J. Blumer, Dawn L. Brasaemle, David N. Brindley, James R. Broach, Roman Chrast, Mark Christian, Günther Daum, Pascale de Lonlay, Edward A. Dennis, Joseph L.. Dixon, William Dowhan, Joseph Eichberg, Scott Emr, Anthony S. Fischl, Susan A. Henry, Michael Kazmaier, Claudia Kent, Kyung-Sup Kim, Christopher R. McMaster, Alfred R. Merrill, Merce Miranda, Thomas J. Montville, Joseph T. Nickels, Jr., Robert A. Niederman, Odile Ozier-Kalogeropoulos, Christian R.H. Raetz, Symeon Siniossoglou, Myron Solberg, Paul Sternweis, Judith Storch, Stephen L. Sturley, Ming-Daw Tsai, Dennis R. Voelker, Charles J. Waechter, Bruce P. Wasserman, Josef Wissing, Raphael A. Zoeller

Teaching/Mentoring

Courses Taught

Undergraduate: Food Chemistry, Topics in Food Chemistry, Food and Enzymes
Graduate: Food Enzymology, Lipids and Signal Transduction, Food Fundamentals II (participate), Advanced Biochemistry (participate), Biochemistry and Molecular Biology (participate), Yeasts (participate), Microbial Biochemistry (participate),

Current Laboratory Members (12)

Prabuddha Dey (postdoctoral), Gil-Soo Han (research assistant professor), Azam Hassaninasab (postdoctoral), Sara Hazaveh (undergraduate), Meagan Hennessy (graduate), Joanna Kwiatek (postdoctoral), Kimberly Lai (undergraduate), Sheron Mehak (undergraduate), Katelyn Meyler (graduate), Mona Mirheydari (postdoctoral), Yeon Hee Park (postdoctoral), Yunjung Shin (undergraduate), Erica Weber (undergraduate)

Former Laboratory Members

Postdoctoral Fellows/Research Associates (23)

Sreenivas Avula (1999-2005), Myonsuk Bae-Lee (1988-1989), Maria Bruno (1993-1995), Hyeon-Son Choi (2008-2011), Lorena Eguez (2007-2008), Stylianos Fakas (2008-2014), Donna Fugit (1983), Kathleen Holland (1986), Michael J. Homann (1988), Lu-Sheng Hsieh (2011-2016), Michael C. Kersting, (2002-2005), Keunsung Kim (1997-1999), Anthony J. Kinney (1988-1989), Virginia M. McDonough (1992-1995), Jeanelle Morgan (2006-2009), Shanthi Rangaswamy (1995-1996), Joseph E. Stukey (1993-1995), Wen-Min Su (2013-2017), David A. Toke (1996-1999), Zhi Xu (2009-2011), Kathleen Welsch (1988), Ying Yu (2000-2002), Geri M. Zeimetz (1995-1997)

Ph.D. Recipients (32)

Myongsuk Bae-Lee (1986), Charles J. Belunis (1989), Rosa J. Buxeda (1993), Minjung Chae (2013), Yu-Fang Chang (2007), Mal-Gi Choi (2006), Hyeon-Son Choi (2008), Michael C. Cirigliano (1986), Anthony S. Fischl (1986), Paulette M. Gaynor (1989), Seung-Hee Han (2007), Michael J. Homann (1987), Wendy Iwanyshyn (2005), Michael J. Kelley (1989), Kee-Hong Kim (1999), Yi-Ping Lin (1991), Kelly R. Morlock (1991), He Mu (2000), Joseph T. Nickels Jr. (1993), June Oshiro (2003), Darin B. Ostrander (1998), Apostolos Pappas (1999), Tae-Sik Park (2001), Yeonhee Park (2015), Florencia Pascual (2013), Margaret A. Poole (1986), Yixuan Qiu (2016) Aníbal Soto-Cardalda (2010), Wen-Min Su (2013), Wen-I Wu (1995), Weng-Lang Yang (1996), Ying Yu (2000)

M.S. Recipients (18)

Mal-Gi Choi (2003), Jeffery J. Cousminer (1982), Deirdre A. Dillion (1997), Steven M. Felder (1980), Anthony S. Fischl (1983), Jamie Furneisen (1999), Michael J. Homann (1984), Joyce M. Hromy (1986), Celeste N. Johnston (2002), Chrysanthos Konstantinou (2011), Maureen McKenzie (1982), Douglas Minck (1989), Anupama Nadkarni (1994), Daniel J. O'Brien (2001), June Oshiro (1999), Jennifer Quinlan (1991), Michele Robinson (1981), Jeanette E. Quinn (2001)

Undergraduate Students (59)

Refereed Publications (212)

1. Hayes, M., V. Choudhary, N. Ojha, J. J. Shin, G. S. Han, G. M. Carman, C. J. Loewen, W. A. Prinz, and T. Levine 2017. Fat storage-inducing transmembrane (FIT or FITM) proteins are related to lipid phosphatase/phosphotransferase enzymes. *Microb.Cell* 5: 88-103.

2. Carman, G. M. and G. S. Han 2018. Phosphatidate phosphatase regulates membrane phospholipid synthesis via phosphatidylserine synthase. *Adv. Biol. Regul.* 67: 49-58.

3. Park, Y., G. S. Han, and G. M. Carman 2017. A conserved tryptophan within the WRDPLVDID domain of yeast Pah1 phosphatidate phosphatase is required for its *in vivo* function in lipid metabolism. *J. Biol. Chem.* 292: 19580-19589.

4. Han, G.-S., and G. M. Carman. 2017. Yeast *PAH1*-encoded phosphatidate phosphatase controls the expression of *CHO1*-encoded phosphatidylserine synthase for membrane phospholipid synthesis. *J. Biol. Chem.* 292: 13230-13242.

5. Hassaninasab, A., G.-S. Han, and G. M. Carman. 2017. Tips on the analysis of phosphatidic acid by the fluorometric coupled enzyme assay. *Anal. Biochem*. 526: 69-70.

6. Dey, P., W.-M. Su, G.-S. Han, and G. M. Carman. 2017. Phosphorylation of lipid metabolic enzymes by protein kinase C requires phosphatidylserine and diacylglycerol. *J. Lipid Res.* 58: 742-751.

7. Qiu, Y., A. Hassaninasab, G.-S. Han, and G. M. Carman 2016. Phosphorylation of Dgk1 diacylglycerol kinase by casein kinase II regulates phosphatidic acid production in *Saccharomyces cerevisiae*. *J. Biol. Chem*. 291: 26455-26467.

8. Temprano, A., H. Sembongi, G. S. Han, D. Sebastian, J. Capellades, C. Moreno, J. Guardiola, M. Wabitsch, C. Richart, O. Yanes, A. Zorzano, G. M. Carman, S. Siniossoglou, and M. Miranda. 2016. Redundant roles of the phosphatidate phosphatase family in triacylglycerol synthesis in human adipocytes. *Diabetologia* 59: 1985-1994.

9. Hsieh, L.-S., W.-M. Su, G.-S. Han, and G.M. Carman. 2016. Phosphorylation of yeast Pah1 phosphatidate phosphatase by casein kinase II regulates its function in lipid metabolism. *J. Biol. Chem*. 291: 9974-9990.

10. Barneda D., J. Planas-Iglesias, M. L. Gaspar, D. Mohammadyani, S. Prasannan, D. Dormann, G. S. Han, S. A. Jesch, G. M. Carman, V. Kagan, M. G. Parker, N. T. Ktistakis, J. Klein-Seetharaman, A. M. Dixon, S. A. Henry, and M. Christian. 2015. The brown adipocyte protein CIDEA promotes lipid droplet fusion via a phosphatidic acid-binding amphipathic helix. *Elife.* DOI: 10.7554/eLife.07485

11. Park Y., G. S. Han, E. Mileykovskaya, T. A. Garrett, and G. M. Carman. 2015. Altered lipid synthesis by lack of yeast Pah1 phosphatidate phosphatase reduces chronological life span. *J. Biol. Chem*. 290: 25382-25394.

12. Barbosa A. D., H. Sembongi, W. M. Su, S. Abreu, F. Reggiori, G. M. Carman, and S. Siniossoglou. 2015. Lipid partitioning at the nuclear envelope controls membrane biogenesis. *Mol. Biol. Cell* 26: 3641-3657.

13. Merrill, A.H., Jr., and G. M. Carman. 2015. Introduction to thematic minireview series: novel bioactive sphingolipids. *J. Biol. Chem.* 290: 15362-15364.

14. Hsieh L.-S., W.-M. Su, G.-S. Han, and G. M. Carman. 2015. Phosphorylation regulates the ubiquitin-independent degradation of yeast Pah1 phosphatidate phosphatase by the 20S proteasome. *J. Biol. Chem.* 290**:** 11467-78.

15. Sahu-Osen, A., G. Montero-Moran, M. Schittmayer, K. Fritz, A. Dinh, Y.-F. Chang, D. McMahon, A. Boeszoermenyi, I. Cornaciu, D. Russell, M. Oberer, G. M. Carman, R. Birner-Gruenberger, and D. L. Brasaemle. 2015. CGI-58/ABHD5 is phosphorylated on Ser-239 by protein kinase A: Control of subcellular localization. *J. Lipid Res.* 56: 109-121.

16. Su, W.-M., G.-S. Han, and G. M. Carman. 2014. Yeast Nem1-Spo7 protein phosphatase activity on Pah1 phosphatidate phosphatase is specific for the Pho85-Pho80 protein kinase phosphorylation sites. *J. Biol. Chem.* 289: 34699-34708.

17. Gomez-Cambronero, J. and G. M. Carman 2014. Thematic minireview series on phospholipase D and cancer. *J.Biol.Chem.* 289: 22554-22556.

18. McMahon, D., A. Dinh, D. Kurz, D. Shah, G.-S. Han, G. M. Carman, and D. L. Brasaemle 2014. Comparative gene identification 58/alpha/beta hydrolase domain 5 lacks lysophosphatidic acid acyltransferase activity. *J. Lipid Res.* 55**:** 1750-1761.

19. Su, W.-M., Han, G.-S., and Carman, G. M. 2014. Cross-talk phosphorylations by protein kinase C and Pho85p-Pho80p protein kinase regulate Pah1p phosphatidate phosphatase abundance in *Saccharomyces cerevisiae*. *J. Biol. Chem.* 289: 18818-18830.

20. Pascual, F., L.-S. Hsieh, A. Soto-Cardalda, and G. M. Carman 2014. Yeast Pah1p phosphatidate phosphatase is regulated by proteasome-mediated degradation. *J. Biol. Chem.* 289: 9811-9822.

21. Pascual F., A. Soto-Cardalda, G. M. Carman. 2013. *PAH1*-encoded phosphatidate phosphatase plays a role in the growth phase- and inositol-mediated regulation of lipid synthesis in *Saccharomyces cerevisiae*. *J. Biol. Chem.* 288: 35781-35792.

22. Gallo-Ebert, C., M. Donigan, H. Y. Liu, F. Pascual, M. Manners, D. Pandya, R. Swanson, D. Gallagher, W. Chen, G. M. Carman, and J. T. Nickels, Jr. 2013. The yeast anaerobic response element AR1b regulates aerobic antifungal drug-dependent sterol gene expression. *J. Biol. Chem.* 288: 35466-35477.

23. Sembongi, H., M. Miranda, G.-S. Han, S. Fakas, N. Grimsey, J. Vendrell, G. M. Carman, and S. Siniossoglou 2013. Distinct roles of the phosphatidate phosphatases lipin 1 and 2 during adipogenesis and lipid droplet biogenesis in 3T3-L1 cells. *J. Biol. Chem.* 288: 34502-34513.

24. Michot, C., A. Mamoune, J. Vamecq, M. T. Viou, L.-S. Hsieh, E. Testet, J. Laine, L. Hubert, A. F. Dessein, M. Fontaine, C. Ottolenghi, L. Fouillen, K. Nadra, E. Blanc, J.

Bastin, S. Candon, M. Pende, A. Munnich, A. Smahi, F. Djouadi, G. M. Carman, N. Romero, Y. de Keyzer, and P. de Lonlay 2013. Combination of lipid metabolism alterations and their sensitivity to inflammatory cytokines in human lipin-1-deficient myoblasts. *Biochim. Biophys. Acta* 1832: 2103-2114.

25. Qiu, Y., S. Fakas, G.-S. Han, A.D. Barbosa, S. Siniossoglou, and G. M. Carman. 2013. Transcription factor Reb1p regulates *DGK1*-encoded diacylglycerol kinase and lipid metabolism in *Saccharomyces cerevisiae*. *J. Biol. Chem*. 288: 29124-29133.

26. Kim, H. E., E. Bae, D.-Y. Jeong, M.-J. Kim, W.-J. Jin, S. W. Park, G.-S. Han, G. M. Carman, E. Koh, and K.-S. Kim. 2013. Lipin1 regulates PPARγ transcriptional activity. *Biochem.J.* 453: 49-60.

27. Karanasios, E., A. D. Barbosa, H. Sembongi, M. Mari, G.-S. Han, F. Reggiori, G. M. Carman, and S. Siniossoglou. 2013. Regulation of lipid droplet and membrane biogenesis by the acidic tail of the phosphatidate phosphatase Pah1p. *Mol.Biol.Cell* 24: 2124-2133.

28. Chae, M. and G.M. Carman. 2013. Characterization of the yeast actin patch protein App1p phosphatidate phosphatase. *J. Biol. Chem.* 288: 6427-6437.

29. Pascual, F. and G. M. Carman. 2013. Phosphatidate phosphatase, a key regulator of lipid homeostasis. *Biochim. Biophys. Acta.* 1831: 514-522.

30. Chae, M., G.-S. Han, and G. M. Carman. 2012. The *Saccharomyces cerevisiae* actin patch protein App1p is a phosphatidate phosphatase enzyme. *J. Biol. Chem.* 287: 40186-40196.

31. Nadra, K., J. J. Medard, J. D. Mul, G.-S. Han, S. Gres, M. Pende, D. Metzger, P. Chambon, E. Cuppen, J. S. Saulnier-Blache, G. M. Carman, B. Desvergne, and R. Chrast. 2012. Cell autonomous lipin 1 function is essential for development and maintenance of white and brown adipose tissue. *Mol. Cell Biol.* 32: 4794-4810.

32. Carman, G. M. 2012. An unusual phosphatidylethanolamine-utilizing cardiolipin synthase is discovered in bacteria. *Proc. Natl. Acad. Sci. U. S. A* 109:16402-16403.

33. Su, W.-M., G.-S. Han, J. Casciano, and G. M. Carman. 2012. Protein kinase A-mediated phosphorylation of Pah1p phosphatidate phosphatase functions in conjunction with the Pho85p-Pho80p and Cdc28p-cyclin B kinases to regulate lipid synthesis in yeast. *J. Biol. Chem.* 287:33364-33376.

34. Choi, H. S., W. M. Su, G. S. Han, D. Plote, Z. Xu, and G. M. Carman. 2012. Pho85p-Pho80p phosphorylation of yeast Pah1p phosphatidate phosphatase regulates its activity, location, abundance, and function in lipid metabolism. *J. Biol. Chem.* 287: 11290-11301.

35. Henry, S.A., S.D. Kohlwein, and G.M. Carman. 2012. Metabolism and regulation of glycerolipids in the yeast *Saccharomyces cerevisiae*. *Genetics* 190: 317-349.

36. Carman, G. M. 2012. Thematic minireview series on the lipid droplet, a dynamic organelle of biomedical and commercial importance. J. Biol. Chem. 287: 2272.

37. Xu Z., W. M. Su, G. M. Carman. 2012. Fluorescence spectroscopy measures yeast *PAH1*-encoded phosphatidate phosphatase interaction with liposome membranes. *J. Lipid Res.* 53: 522-528.

38. Soto-Cardalda A., S. Fakas, F. Pascual, H. S. Choi, G. M. Carman. 2011. Phosphatidate phosphatase plays role in zinc-mediated regulation of phospholipid synthesis in yeast. *J. Biol. Chem.* 287: 968-977.

39. Fakas, S., Y. Qiu, J. L. Dixon, G.-S. Han, K. V. Ruggles, J. Garbarino, S. L. Sturley, and G. M. Carman. 2011. Phosphatidate phosphatase activity plays a key role in protection against fatty acid-induced toxicity in yeast. *J. Biol. Chem*. 286:29074-29085.

40. Wang, H., J. Zhang, W. Qiu, G.-S. Han, G. M. Carman, and K. Adeli. 2011. Lipin-1γ isoform is a novel lipid droplet-associated protein highly expressed in the brain. *FEBS Lett.* 585, 1279-1284.

41. Mul, J. D., K. Nadra, N. B. Jagalur, I. J. Nijman, P. W. Toonen, J. J. Medard, S. Gres, B. A. de, G.-S. Han, J. F. Brouwers, G.M. Carman, J. S. Saulnier-Blache, D. Meijer, R. Chrast, and E. Cuppen 2011. A hypomorphic mutation in *Lpin1* induces progressively improving neuropathy and lipodystrophy in the rat. *J.Biol.Chem.* 286: 26781-26793.

42. Choi, H.-S., W.-M. Su, J. M. Morgan, G.-S. Han, Z. Xu, E. Karanasios, S. Siniossoglou, and G. M. Carman. 2011. Phosphorylation of phosphatidate phosphatase regulates its membrane association and physiological functions in *Saccharomyces cerevisiae*. Identification of Ser^{602}, Thr^{723}, and Ser^{744} as the sites phosphorylated by *CDC28* (*CDK1*)-encoded cyclin-dependent kinase. *J. Biol. Chem.* 286:1486-1498.

43. Fakas, S., C. Konstantinou, and G. M. Carman. 2011. *DGK1*-encoded diacylglycerol kinase activity is required for phospholipid synthesis during growth resumption from stationary phase in *Saccharomyces cerevisiae*. *J. Biol. Chem.* 286:1464-1474.

44. Carman, G.M., and G.-S. Han. 2011. Regulation of phospholipid synthesis in the yeast *Saccharomyces cerevisiae*. *Ann. Rev. Biochem.* 80: 859-883.

45. Carman, G.M. 2011. The discovery of the fat-regulating phosphatidic acid phosphatase gene. Front. Biol. 6: 172-176.

46. Karanasios, E., G.-S. Han, Z. Xu, G. M. Carman, and S. Siniossoglou. 2010. A phosphorylation-regulated amphipathic helix controls the membrane translocation and function of the yeast phosphatidate phosphatase. *Proc. Natl. Acad. Sci. U. S. A.* 107:17539-17544.

47. Han, G.-S. and G. M. Carman. 2010. Characterization of the human *LPIN1*-encoded phosphatidate phosphatase isoforms. *J. Biol. Chem.* 285: 14628-14638.

48. Choi, H.-S., G.-S. Han, and G. M. Carman. 2010. Phosphorylation of yeast phosphatidylserine synthase by protein kinase A. Identification of Ser^{46} and Ser^{47} as major sites of phosphorylation. *J. Biol. Chem.* 285: 11526-11536.

49. Montero-Moran, G., J. M. Caviglia, D. McMahon, A. Rothenberg, V. Subramanian, Z. Xu, S. Lara-Gonzalez, J. Storch, G.M. Carman, and D.L. Brasaemle. 2010. CGI-58/ABHD5 is a coenzyme A-dependent lysophosphatidic acid acyltransferase. *J. Lipid Res.* 51: 709-719.

50. Haller, J. F., C. Smith, D. Liu, H. Zheng, K. Tornheim, G.-S. Han, G. M. Carman, and R. A. Zoeller. 2010. Isolation of novel animal cell lines defective in glycerolipid biosynthesis reveals mutations in glucose-6-phosphate isomerase. *J. Biol. Chem.* 285: 866-877.

51. Elswaifi, S. F., F. St. Michael, A. Sreenivas, A. Cox, G.M. Carman, and T.J. Inzana. 2009. Molecular characterization of phosphorylcholine expression on the lipooligosaccharide of *Histophilus somni*. *Microb.Pathog.* 47**:** 223-230.

52. Carman, G.M., and G.-S. Han. 2009. Regulation of phospholipid synthesis in yeast. *J. Lipid Res.* 50: S69-S73.

53. Carman, G.M., and G.-S. Han. 2009. Phosphatidic acid phosphatase, a key enzyme in the regulation of lipid synthesis. *J. Biol. Chem.* 284: 2593-2597.

54. Grimsey, N., G. S. Han, L. O' Hara, J. J. Rochford, G. M. Carman, and S. Siniossoglou. 2008. Temporal and spatial regulation of the phosphatidate phosphatases lipin 1 and 2. *J. Biol. Chem.* 283: 29166-29174.

55. Han, G.-S., L. O' Hara, G.M. Carman, and S. Siniossoglou. 2008. An unconventional diacylglycerol kinase that regulates phospholipid synthesis and nuclear membrane growth. *J. Biol. Chem*. 283: 20433-20442.

56. Han, G.-S., L. O' Hara, S. Siniossoglou, and G.M. Carman. 2008. Characterization of the yeast *DGK1*-encoded CTP-dependent diacylglycerol kinase. *J. Biol. Chem*. 283: 20443-20453.

57. Chang, Y.-F., and G.M. Carman. 2008. CTP synthetase and its role in phospholipid synthesis in the yeast *Saccharomyces cerevisiae*. *Prog. Lipid Res*. 47: 333-339.

58. Nadra, K., A.-S. de Preux Charles, J.-J. Médard, W.T. Hendriks, G.-S. Han, S. Grès, G.M. Carman, J.-S. Saulnier-Blache, M.H.G. Verheijen, and R. Chrast. 2008. Phosphatidic acid mediates demyelination in *Lpin1* mutant mice. *Genes Dev*. 22, 1647-1661.

59. Soto, A., and G.M. Carman. 2008. Regulation of the *Saccharomyces cerevisiae CKI1*-encoded choline kinase by zinc depletion. *J. Biol. Chem*. 283: 10079-10088.

60. Havriluk, T., F. Lozy, S. Siniossoglou, and G.M. Carman. 2008. Colorimetric determination of pure Mg^{2+}-dependent phosphatidate phosphatase activity. Anal. Biochem. 373: 392-394.

61. Carman, G.M., and S.A. Henry. 2007. Phosphatidic acid plays a central role in the transcriptional regulation of glycerophospholipid synthesis in *Saccharomyces cerevisiae*. *J. Biol. Chem*. 282: 37293-37297.

62. Han, G.-S., S. Siniossoglou, and G.M. Carman. 2007. The cellular functions of the yeast lipin homolog Pah1p are dependent on its phosphatidate phosphatase activity. *J. Biol. Chem*. 282: 37026-37035.

63. Carman, G.M., and W.-I. Wu. 2007. Lipid phosphate phosphatases from *Saccharomyces cerevisiae*. *Methods. Enzymol.* 434: 305-315.

64. Choi, H.-S., and G.M. Carman. 2007. Respiratory deficiency mediates the regulation of *CHO1*-encoded phosphatidylserine synthase by mRNA stability in *Saccharomyces cerevisiae*. *J. Biol. Chem.* 282: 31217-31227.

65. Chang, Y.-F., S.S. Martin, E.P. Baldwin, and G.M. Carman. 2007. Phosphorylation of human CTP synthetase 1 by protein kinase C. Identification of Ser^{462} and Thr^{455} as major sites of phosphorylation. *J. Biol. Chem.* 282: 17613-17622.

66. Choi, M.-G., and G.M. Carman. 2007. Phosphorylation of human CTP synthetase 1 by protein kinase A. Identification of Thr^{455} as a major site of phosphorylation. *J. Biol. Chem.* 282: 5367-5377.

67. Carman, G.M., and G.-S. Han. 2007. Regulation of phospholipid synthesis in *Saccharomyces cerevisiae* by zinc depletion. *Biochim. Biophys. Acta*. 1771: 322-330.

68. Carman, G.M., and S.A. Henry. 2007. Special issue: Regulation of lipid metabolism in yeast. *Biochim. Biophys. Acta*. 1771: 239-240.

69. Carman, G.M., and G.-S. Han. 2006. Roles of phosphatidate phosphatase enzymes in lipid metabolism. *Trends Biochem. Sci*. 31: 694-699.

70. O'Hara, L., G.-S. Han, S. Peak-Chew, N. Grimsey, G.M. Carman, and S. Siniossoglou. 2006. Control of phospholipid synthesis by phosphorylation of the yeast lipin Pah1p/Smp2p Mg^{2+}-dependent phosphatidate phosphatase. *J. Biol. Chem.* 281: 34537-34548.

71. Kersting, M.C., and G.M. Carman. 2006. Regulation of the *Saccharomyces cerevisiae* *EKI1*-encoded ethanolamine kinase by zinc depletion. *J. Biol. Chem.* 281: 13110-13116.

72. Han, G.-S., W.-I. Wu, and G.M. Carman. 2006. The *Saccharomyces cerevisiae* lipin homolog is a Mg^{2+}-dependent phosphatidate phosphatase enzyme. *J. Biol. Chem.* 281: 9210-9218.

73. Chang, Y.-F., and G.M. Carman. 2006. Casein kinase II phosphorylation of the yeast phospholipid synthesis transcription factor Opi1p. *J. Biol. Chem.* 281: 4754-4761.

74. Han, G.-S., A. Sreenivas, M.-G. Choi, Y.-F. Chang, S.S. Martin, E.P. Baldwin, and G.M. Carman. 2005. Expression of human CTP synthetase in *Saccharomyces cerevisiae* reveals phosphorylation by protein kinase A. *J. Biol. Chem.* 280: 38328-38336.

75. Carman, G. M. 2005. Regulation of phospholipid synthesis in yeast by zinc. *Biochem. Soc.Trans.* 33: 1150-1153.

76. Han, S.-H., G.-S. Han, W.M. Iwanyshyn, and G.M. Carman. 2005. Regulation of the *PIS1*-encoded phosphatidylinositol synthase in *Saccharomyces cerevisiae* by zinc. *J. Biol. Chem.* 280: 29017-29024.

77. Chang, F.S., G.-S. Han, G.M. Carman, and K.J. Blumer. 2005. A WASp-binding type II phosphatidylinositol 4-kinase is required for actin polymerization-dependent endosome motility. *J. Cell Biol.* 171: 133-142.

78. Choi, M.-G., V. Kurnov, M.C. Kersting, A. Sreenivas, and G.M. Carman. 2005. Phosphorylation of the yeast choline kinase by protein kinase C. Identification of Ser^{25} and Ser^{30} as major sites of phosphorylation. *J. Biol. Chem.* 280: 26105-26112.

79. Kersting, M.C., H.-S. Choi, and G.M. Carman. 2004. Regulation of the yeast *EKI1*-encoded ethanolamine kinase by inositol and choline. *J. Biol. Chem.* 279: 35353-35359.

80. Iwanyshyn, W.M., G.-S. Han, and G.M. Carman. 2004. Regulation of phospholipid synthesis in *Saccharomyces cerevisiae* by zinc. *J. Biol. Chem.* 279: 21976-21983.

81. Choi, H.-S., A. Sreenivas, G.-S. Han, and G.M. Carman. 2004. Regulation of phospholipid synthesis in the yeast *cki1*Δ *eki1*Δ mutant defective in the Kennedy pathway.

The *CHO1*-encoded phosphatidylserine synthase is regulated by mRNA stability. *J. Biol. Chem.* 279: 12081-12087.

82. Han, G.-S., C.N. Johnston, and G.M. Carman. 2004. Vacuole membrane topography of the *DPP1*-encoded diacylglycerol pyrophosphate phosphatase catalytic site from *Saccharomyces cerevisiae*. *J. Biol. Chem.* 279: 5338-5345.

83. Carman, G.M., and M.C. Kersting. 2004. Phospholipid synthesis in yeast: regulation by phosphorylation. *Biochem. Cell Biol*. 82: 62-70.

84. Han, G.-S., and G.M. Carman. 2004. Assaying lipid phosphate phosphatase activities. *Methods Mol. Biol.* 284: 209-216.

85. Han, G.-S., and G.M. Carman. 2004. Phospholipid synthesis in yeast, in *Encyclopedia of Biological Chemistry* (W.J. Lennarz and M.D. Lane, eds), Elsevier, Oxford. 3: 321-325.

86. McEntire, J.C., G.M. Carman, and T.J. Montville. 2004. Increased ATPase activity is responsible for acid sensitivity of nisin-resistant *Listeria monocytogenes* ATCC 700302. *Appl. Environ. Microbiol*. 70: 2717-21.

87. Oshiro, J., G.-S. Han, and G.M. Carman. 2003. Diacylglycerol pyrophosphate phosphatase in *Saccharomyces cerevisiae*. *Biochim. Biophys. Acta* 1635: 1-9.

88. Oshiro, J., G.-S. Han, W.M. Iwanyshyn, K. Conover, and G.M. Carman. 2003. Regulation of the yeast *DPP1*-encoded diacylglycerol pyrophosphate phosphatase by transcription factor Gis1p. *J. Biol. Chem.* 278: 31495-31503.

89. Choi, M.-G., T.-S. Park, and G.M. Carman. 2003. Phosphorylation of *Saccharomyces cerevisiae* CTP synthetase at Ser^{424} by protein kinases A and C regulates phosphatidylcholine synthesis by the CDP-choline pathway. *J. Biol. Chem.* 278: 23610-23616.

90. Sreenivas, A., and G.M. Carman. 2003. Phosphorylation of the yeast phospholipid synthesis regulatory protein Opi1p by protein kinase A. *J. Biol. Chem.* 278: 20673-20680.

91. Park, T.-S., D.J. O'Brien, and G.M. Carman. 2003. Phosphorylation of CTP synthetase on Ser^{36}, Ser^{330}, Ser^{354}, and Ser^{454} regulates the levels of CTP and phosphatidylcholine synthesis in *Saccharomyces cerevisiae*. *J. Biol. Chem.* 278: 20785-20794.

92. Han, G.-S., A. Audhya, D.J. Markley, S.D. Emr, and G.M. Carman. 2002. The *Saccharomyces cerevisiae LSB6* gene encodes phosphatidylinositol 4-kinase activity. *J. Biol. Chem.* 277: 47709-47718.

93. Yu, Y., A. Sreenivas, D.B. Ostrander, and G.M. Carman. 2002. Phosphorylation of *Saccharomyces cerevisiae* choline kinase on Ser^{30} and Ser^{85} by protein kinase A regulates phosphatidylcholine synthesis by the CDP-choline pathway. *J. Biol. Chem.* 277: 34978-34986.

94. Sreenivas, A., M.J. Villa-Garcia, S.A. Henry, and G.M. Carman. 2001. Phosphorylation of the yeast phospholipid synthesis regulatory protein Opi1p by protein kinase C. *J. Biol. Chem.* 276: 29915-29923.

95. Fernandez, F., J.S. Rush, D.A. Toke, G.-S. Han, J.E. Quinn, G.M. Carman, J.-Y. Choi, D.R. Voelker, M. Aebi, and C.J. Waechter. 2001. The *CWH8* gene encodes a dolichyl pyrophosphate phosphatase with a luminally oriented active site in the endoplasmic reticulum of *Saccharomyces cerevisiae*. *J. Biol. Chem.* 2001 276: 41455-41464.

96. Han, G.-S., C.N. Johnston, X. Chen, K. Athenstaedt, G. Daum, and G.M. Carman. 2001. Regulation of the *Saccharomyces cerevisiae DPP1*-encoded diacylglycerol pyrophosphate phosphatase by zinc. *J. Biol. Chem.* 276: 10126-10133.

97. Pierrugues, O., C. Brutesco, J. Oshiro, M. Gouy, Y. Deveaux, G.M. Carman, P. Thuriaux, and M. Kazmaier. 2001. Lipid phosphate phosphatases in *Arabidopsis*. Regulation of *AtLPP1* in response to stress. *J. Biol. Chem.* 276: 20300-20308.

98. Yu, Y., H.H. Mu, B.P. Wasserman, and G.M. Carman. 2001. Identification of the maize amyloplast stromal 112-kD protein as a plastidic starch phosphorylase. *Plant Physiol.* 125: 351-359.

99. Mu, H.H., Y. Yu, B.P. Wasserman, and G.M. Carman. 2001. Purification and characterization of the maize amyloplast stromal 112-kD starch phosphorylase. Arch. Biochem. Biophys. 388: 155-164.

100. Furneisen, J.M., and G.M. Carman. 2000. Enzymological properties of the *LPP1*-encoded lipid phosphatase from *Saccharomyces cerevisiae*. *Biochim. Biophys. Acta* 1484: 71-82.

101. Shih, C., G.M. Carman, and B.P. Wasserman. 2000. Ripening-associated proteolysis of a 27-kDa major intrinsic protein (MIP27) in tomato fruit. *J. Food Biochem.* 24: 213-224.

102. Wu, W.-I., and G.M. Carman. 2000. Kinetic analysis of sphingoid base inhibition of yeast phosphatidate phosphatase. *Methods Enzymol.* 312: 373-380.

103. Oshiro, J., S. Rangaswamy, X. Chen, G.-S. Han, J.E. Quinn, and G.M. Carman. 2000. Regulation of the *DPP1*-encoded diacylglycerol pyrophosphate (DGPP) phosphatase by inositol and growth phase. Inhibition of DGPP phosphatase activity by CDP-diacylglycerol and activation of phosphatidylserine synthase activity by DGPP. *J. Biol. Chem.* 275: 40887-40896.

104. Balboa, M.A., J. Balsinde, D.A. Dillon, G.M. Carman, and E.A. Dennis. 1999. Proinflammatory macrophage-activating properties of the novel phospholipid diacylglycerol pyrophosphate. *J. Biol. Chem.* 274: 522-526.

105. Kim, K.-H., and G.M. Carman. 1999. Phosphorylation and regulation of choline kinase from *Saccharomyces cerevisiae* by protein kinase A. *J. Biol. Chem.* 274: 9531-9538.

106. Kent, C., and G.M. Carman. 1999. Interactions among pathways for phosphatidylcholine metabolism, CTP synthesis and secretion through the Golgi apparatus. *Trends Biochem. Sci*. 24: 146-150.

107. Faulkner, A., X. Chen, J. Rush, B. Horazdovsky, C.J. Waechter, G.M. Carman, and P.C. Sternweis. 1999. The *LPP1* and *DPP1* gene products account for most of the isoprenoid phosphate phosphatase activities in *Saccharomyces cerevisiae*. *J. Biol. Chem.* 274: 14831-14837.

108. Kim, K., K.-H. Kim, M.K. Storey, D.R. Voelker, and G.M. Carman. 1999. Isolation and characterization of the *Saccharomyces cerevisiae EKI1* gene encoding ethanolamine kinase. *J. Biol. Chem.* 274: 14857-14866.

109. Jasinska, R., Q.-X. Zhang, C. Pilquil, I. Singh, J. Xu, J. Dewald, D.A. Dillon, L.G. Berthiaume, G.M. Carman, D.W. Waggoner, and D.N. Brindley. 1999. Lipid phosphate

phosphohydrolase-1 degrades exogenous glycerolipid and sphingolipid phosphate esters. *Biochem. J*. 340: 677-686.

110. Park, T.-S., D.B. Ostrander, A. Pappas, and G.M. Carman. 1999. Identification of Ser^{424} as the protein kinase A phosphorylation site in CTP synthetase from *Saccharomyces cerevisiae*. *Biochemistry* 38: 8839-8848.

111. Toke, D.A., M.L. McClintick, and G. M. Carman. 1999. Mutagenesis of the phosphatase sequence motif in diacylglycerol pyrophosphate phosphatase from *Saccharomyces cerevisiae*. *Biochemistry* 38: 14606-14613.

112. Carman, G.M. and S.A. Henry. 1999. Phospholipid biosynthesis in the yeast *Saccharomyces cerevisiae* and interrelationship with other metabolic processes. *Prog. Lipid Res*. 38: 361-399.

113. Pappas, A., T.-S. Park, and G.M. Carman. 1999. Characterization of a novel dUTP-dependent activity of CTP synthetase from *Saccharomyces cerevisiae*. *Biochemistry* 38: 16671-16677.

114. Toke, D.A., W. L. Bennett, D. A. Dillon, W.-I. Wu, X. Chen, D.B. Ostrander, J. Oshiro, A. Cremesti, D.R. Voelker, A.S. Fischl, and G.M. Carman. 1998. Isolation and characterization of the *Saccharomyces cerevisiae DPP1* gene encoding diacylglycerol pyrophosphate phosphatase. *J. Biol. Chem.* 273: 3278-3284.

115. Kim, K.-H., D.R. Voelker, M.T. Flocco, and G.M. Carman. 1998. Expression, purification, and characterization of choline kinase, product of the *CKI* gene from *Saccharomyces cerevisiae*. *J. Biol. Chem.* 273: 6844-6852.

116. Toke, D.A., W.L. Bennett, J. Oshiro, W.-I. Wu, D.R. Voelker, and G.M. Carman. 1998. Isolation and characterization of the *Saccharomyces cerevisiae LPP1* gene encoding a Mg^{2+}-independent phosphatidate phosphatase. *J. Biol. Chem.* 273: 14331-14338.

117. Pappas, A., W.-L. Yang, T.-S. Park, and G.M. Carman. 1998. Nucleotide-dependent tetramerization of CTP synthetase from *Saccharomyces cerevisiae*. *J. Biol. Chem.* 273: 15954-15960.

118. Ostrander, D.B., D.J. O'Brien, J.A. Gorman, and G.M. Carman. 1998. Effect of CTP synthetase regulation by CTP on phospholipid synthesis in *Saccharomyces cerevisiae*. *J. Biol. Chem.* 273: 18992-19001.

119. Stukey, J., and G.M. Carman. 1997. Identification of a novel phosphatase sequence motif. *Protein Science*. 6: 469-472.

120. Dillon, D.A., X. Chen, G.M. Zeimetz, W.-I. Wu, D.W. Waggoner, J. Dewald, D.N. Brindley, and G.M. Carman. 1997. Mammalian Mg^{2+}-independent phosphatidate phosphatase (PAP2) displays diacylglycerol pyrophosphate phosphatase activity. *J. Biol. Chem.* 272: 10361-10366.

121. Carman, G.M. 1997. Phosphatidate phosphatases and diacylglycerol pyrophosphate phosphatases in *Saccharomyces cerevisiae* and *Escherichia coli*. *Biochim. Biophys. Acta*. 1348: 45-55.

122. Riedel, B., M. Morr, W.-I. Wu, G.M. Carman, J.B. Wissing. 1997. Metabolism of diacylglycerol pyrophosphate by suspension cultured *Catharanthus roseus* cells. Identification and characterization of diacylglycerol pyrophosphate phosphatase in plants. *Plant Sci*. 128: 1-10.

123. Wu, W.-I., Y. Liu, B. Riedel, J.B. Wissing, A.S. Fischl, and G.M. Carman. 1996. Purification and characterization of diacylglycerol pyrophosphate phosphatase from *Saccharomyces cerevisiae*. *J. Biol. Chem.* 271: 1868-1876.

124. Wu, W.-I., and G.M. Carman. 1996. Regulation of phosphatidate phosphatase activity from the yeast *Saccharomyces cerevisiae* by phospholipids. *Biochemistry*. 35: 3790-3796.

125. Yang, W.-L., M.E.C. Bruno, and G.M. Carman. 1996. Regulation of yeast CTP synthetase activity by protein kinase C. *J. Biol. Chem.* 271: 11113-11119.

126. Carman, G.M., and G.M. Zeimetz. 1996. Regulation of phospholipid biosynthesis in the yeast *Saccharomyces cerevisiae*. *J. Biol. Chem.* 271: 13292-13296.

127. Carman, G.M., R.J. Buxeda, and J.T. Nickels, Jr. 1996. Phosphatidylinositol 4-kinases in *Saccharomyces cerevisiae* in *Advances in Lipobiology* (Gross, R.W., ed.). Jai Press. Greenwich CT. 367-385.

128. Yang, W.-L., and G.M. Carman. 1996. Phosphorylation and regulation of CTP synthetase from *Saccharomyces cerevisiae* by protein kinase A. *J. Biol. Chem.* 271: 28777-28783.

129. Dillon, D.A., W.-I. Wu, B. Riedel, J.B. Wissing, W. Dowhan, and G.M. Carman. 1996. The *Escherichia coli pgpB* gene encodes for a diacylglycerol pyrophosphate phosphatase activity. *J. Biol. Chem.* 271: 30548-30553.

130. Wu, W.-I., V.M. McDonough, J.T. Nickels, Jr., J. Ko, A.S. Fischl, T.R. Vales, A.H. Merrill, Jr. and G.M. Carman. 1995. Regulation of lipid biosynthesis in *Saccharomyces cerevisiae* by Fumonisin B_1. *J. Biol. Chem.* 270: 13171-13178.

131. Yang, W.-L., and G.M. Carman. 1995. Phosphorylation of CTP synthetase from *Saccharomyces cerevisiae* by protein kinase C. *J. Biol. Chem.* 270: 14983-14988.

132. McDonough, V.M., R.J. Buxeda, M.E.C. Bruno, O. Ozier-Kalogeropoulos, M.-T. Adeline, C.R. McMaster, R.M. Bell, and G.M. Carman. 1995. Regulation of phospholipid biosynthesis in *Saccharomyces cerevisiae* by CTP. *J. Biol. Chem.* 270: 18774-18780.

133. Carman, G.M., R.A. Deems, and E.A. Dennis. 1995. Lipid signaling enzymes and surface dilution kinetics. *J. Biol. Chem.* 270: 18711-18714.

134. Nadkarni, A.K., V.M. McDonough, W.-L. Yang, J.E. Stukey, O. Ozier-Kalogeropoulos, and G.M. Carman. 1995. Differential biochemical regulation of the *URA7*- and *URA8*-encoded CTP synthetases from *Saccharomyces cerevisiae*. *J. Biol. Chem.* 270: 24982-24988.

135. Ostrander, D.B., J.A. Gorman, and G.M. Carman. 1995. Regulation of profilin localization in *Saccharomyces cerevisiae* by phosphoinositide metabolism. *J. Biol. Chem.* 270: 27045-27050.

136. Ozier-Kalogeropoulos, O., M.-T. Adeline, W.-L. Yang, G.M. Carman, and F. Lacroute. 1994. Use of synthetic lethal mutants to clone and characterize a novel CTP synthetase gene in *Saccharomyces cerevisiae*. *Mol. Gen. Genet*. 242: 431-439.

137. Nickels, J.T. Jr., R.J. Buxeda, and G.M. Carman. 1994. Regulation of phosphatidylinositol 4-kinase from the yeast *Saccharomyces cerevisiae* by CDP-diacylglycerol. *J. Biol. Chem.* 269: 11019-11024.

138. Yang, W.-L, V.M. McDonough, O. Ozier-Kalogeropoulos, M.-T. Adeline, M.T. Flocco, and G.M. Carman. 1994. Purification and characterization of CTP synthetase, the product of the *URA7* gene in *Saccharomyces cerevisiae*. *Biochemistry* 33: 10785-10793.

139. Wu, W.-I., and G.M. Carman. 1994. Regulation of phosphatidate phosphatase activity from the yeast *Saccharomyces cerevisiae* by nucleotides. *J. Biol. Chem.* 269: 29495-29501.

140. Buxeda, R.J., J.T. Nickels, Jr., and G.M. Carman. 1993. Regulation of the 45- and 55-kDa forms of phosphatidylinositol 4-kinase from the yeast *Saccharomyces cerevisiae* by nucleotides. *J. Biol. Chem.* 268: 6248-6255.

141. Wu, W.-I., Y.-P. Lin, E. Wang, A.H. Merrill, Jr., and G.M. Carman. 1993. Regulation of phosphatidate phosphatase activity from the yeast *Saccharomyces cerevisiae* by sphingoid bases. *J. Biol. Chem.* 268: 13830-13837.

142. Nickels, J.T., Jr., and G.M. Carman. 1993. Photoaffinity labeling of the 45-kDa and 55-kDa forms of phosphatidylinositol 4-kinase from the yeast *Saccharomyces cerevisiae*. *J. Biol. Chem.* 268: 24083-24088.

143. Quinlan, J.J., J.T. Nickels Jr., W.-I. Wu, Y.-P. Lin, J.R. Broach, and G.M. Carman. 1992. The 45-kDa and 104-kDa forms of phosphatidate phosphatase from *Saccharomyces cerevisiae* are regulated differentially by phosphorylation via cAMP-dependent protein kinase. *J. Biol. Chem.* 267: 18013-18020.

144. Nickels, J.T. Jr., R.J. Buxeda, and G.M. Carman. 1992. Purification, characterization, and kinetic analysis of a 55-kDa form of phosphatidylinositol 4-kinase from *Saccharomyces cerevisiae*. *J. Biol. Chem.* 267: 16297-16304.

145. Carman, G.M., and M. Bae-Lee. 1992. Phosphatidylserine synthase from yeast. *Methods Enzymol.* 209: 298-305.

146. Carman, G.M., C.J. Belunis, and J.T. Nickels. 1992. Phosphatidylinositol 4-kinase from yeast. *Methods Enzymol.* 209: 183-189.

147. Carman, G.M., and A.S. Fischl. 1992. Phosphatidylinositol synthase from yeast. *Methods Enzymol.* 209: 305-312.

148. Carman, G.M., and M.J. Kelley. 1992. CDPdiacylglycerol synthase from yeast. *Methods Enzymol.* 209: 242-247.

149. Carman, G.M., and J.J. Quinlan. 1992. Phosphatidate phosphatase from yeast mitochondria. *Methods Enzymol.* 209: 219-224.

150. Morlock, K.R., J.J. McLaughlin, Y.-P. Lin, and G.M. Carman. 1991. Phosphatidate phosphatase from *Saccharomyces cerevisiae*. Isolation of 45-kDa and 104-kDa forms of the enzyme that are differentially regulated by inositol. *J. Biol. Chem.* 266: 3586-3593.

151. Buxeda, R.J., J.T. Nickels, Jr., C.J. Belunis, and G.M. Carman. 1991. Phosphatidylinositol 4-kinase from *Saccharomyces cerevisiae*. Kinetic analysis using Triton X-100/phosphatidylinositol mixed micelles. *J. Biol. Chem.* 266: 13859-13865.

152. Kent, C., G.M. Carman, M.W. Spence, and W. Dowhan. 1991. Regulation of eukaryotic phospholipid metabolism. FASEB J. 5: 2258-2266.

153. Gaynor, P.M., T. Gill, S. Toutenhoofd, E.F. Summers, P. McGraw, M.J. Homann, S.A. Henry, and G.M. Carman. 1991. Regulation of phosphatidylethanolamine methyltransferase and phospholipid methyltransferase by phospholipid precursors in *Saccharomyces cerevisiae*. *Biochim. Biophys. Acta* 1090: 326-332.

154. Carman, G.M., and Y.-P. Lin. 1991. Phosphatidate phosphatase from yeast. *Methods Enzymol.* 197: 548-553.

155. Lin, Y.-P., and G.M. Carman. 1990. Kinetic analysis of yeast phosphatidate phosphatase toward Triton X-100/phosphatidate mixed micelles. *J. Biol. Chem.* 265: 166-170.

156. Kinney, A.J., M. Bae-Lee, S. Singh Panghaal, M.J. Kelley, P. M. Gaynor, and G.M. Carman. 1990. Regulation of phospholipid biosynthesis in *Saccharomyces cerevisiae* by cyclic AMP- dependent protein kinase. *J. Bacteriol.* 172: 1133-1136.

157. Gaynor, P.M., and G.M. Carman. 1990. Phosphatidylethanolamine methyltransferase and phospholipid methyltransferase activities from *Saccharomyces cerevisiae*. Enzymological and kinetic properties. *Biochim. Biophys. Acta* 1045:156-163.

158. Bae-Lee, M., and G.M. Carman. 1990. Regulation of yeast phosphatidylserine synthase and phosphatidylinositol synthase activities by phospholipids in Triton X- 100/phospholipid mixed micelles. *J. Biol. Chem.* 265: 7221-7226.

159. Kinney, A.J., and G.M. Carman. 1990. Enzymes of phosphoinositide synthesis in secretory vesicles destined for the plasma membrane in *Saccharomyces cerevisiae*. *J. Bacteriol.* 172: 4115-4117.

160. Lin, Y.-P., and G.M. Carman. 1989. Purification and characterization of phosphatidate phosphatase from *Saccharomyces cerevisiae*. *J. Biol. Chem.* 264: 8641-8645.

161. Carman, G.M., and S.A. Henry. 1989. Phospholipid biosynthesis in yeast. *Ann. Rev. Biochem*. 58: 635-669.

162. Radcliffe, C.W., F.X. Steiner, G.M. Carman, and R.A. Niederman. 1989. Characterization and localization of phosphatidylglycerophosphate and phosphatidylserine synthases in *Rhodobacter sphaeroides*. *Arch. Microbiol*. 152: 132-137.

163. Bonnel, S.I., Y.-P. Lin, M.J. Kelley, G.M. Carman, and J. Eichberg. 1989. Interaction of thiophosphatidic acid with enzymes which metabolize phosphatidic acid. Inhibition of phosphatidic acid phosphatase and utilization by CDP- diacylglycerol synthase. *Biochim. Biophys. Acta* 1005: 289- 295.

164. Carman, G.M. 1989. Phosphatidylcholine metabolism in *Saccharomyces cerevisiae*. In *Phosphatidylcholine metabolism* (Vance, D.E., ed.), CRC Press, Inc. Boca Raton, FL. 165-184.

165. Holland, K.M., M.J. Homann, C.J. Belunis, and G.M. Carman. 1988. Regulation of phosphatidylinositol kinase activity in *Saccharomyces cerevisiae*. *J. Bacteriol.* 170: 828-833.

166. Klig, L.S., M.J. Homann, S.D. Kohlwein, M.J. Kelley, S.A. Henry, and G.M. Carman. 1988. *Saccharomyces cerevisiae* mutant with a partial defect in the synthesis of CDP-

diacylglycerol and altered regulation of phospholipid biosynthesis. *J. Bacteriol.* 170: 1878-1886.

167. Morlock, K.R., Y.-P. Lin, and G.M. Carman. 1988. Regulation of phosphatidate phosphatase activity by inositol in *Saccharomyces cerevisiae*. *J. Bacteriol.* 170: 3561-3566.

168. Kelley, M.J., A.M. Bailis, S.A. Henry, and G.M. Carman. 1988. Regulation of phospholipid biosynthesis in *Saccharomyces cerevisiae* by inositol. Inositol is an inhibitor of phosphatidylserine synthase activity. *J. Biol. Chem.* 263: 18078-18085.

169. Kinney, A.J., and G.M. Carman. 1988. Phosphorylation of yeast phosphatidylserine synthase *in vivo* and *in vitro* by cyclic AMP-dependent protein kinase. *Proc. Natl. Acad. Sci.* 85: 7962-7966.

170. Belunis, C.J., M. Bae-Lee, M.J. Kelley, and G.M. Carman. 1988. Purification and characterization of phosphatidylinositol kinase from *Saccharomyces cerevisiae*. *J. Biol. Chem.* 263: 18897-18903.

171. Bailis, A.M., M.A. Poole, G.M. Carman, and S.A. Henry. 1987.The membrane-associated enzyme phosphatidylserine synthase of yeast is regulated at the level of mRNA abundance. *Mol. Cell. Biol*. 7: 167-176.

172. Homann, M.J. M.A. Poole, P.M. Gaynor, C.-T. Ho, and G.M. Carman. 1987. Effect of growth phase on phospholipid biosynthesis in *Saccharomyces cerevisiae*. *J. Bacteriol.* 169: 533-539.

173. Homann, M.J., A.M. Bailis, S.A. Henry, and Carman, G.M. 1987. Coordinate regulation of phospholipid biosynthesis by serine in *Saccharomyces cerevisiae*. *J. Bacteriol.* 169: 3276-3280.

174. Raetz, C.R.H., Carman, G.M., Dowhan, W., Jiang, R-T., Waszkuc, W., Loffredo, W., and Tsai, M-D. 1987. Phospholipids chiral at phosphorus. Steric course of the reactions catalyzed by phosphatidylserine synthase from Escherichia coli and yeast. *Biochemistry* 26: 4022-4027.

175. Kelley, M.J., and G.M. Carman. 1987. Purification and characterization of CDPdiacylglycerol synthase from *Saccharomyces cerevisiae*. *J. Biol. Chem.* 262: 14563-14570.

176. Fischl, A.S., M.J. Homann, M.A. Poole, and G.M. Carman. 1986. Phosphatidylinositol synthase from *Saccharomyces cerevisiae*. Reconstitution, characterization, and regulation of activity. *J. Biol. Chem.* 261: 3178-3183.

177. Poole, M.A., M.J. Homann, M. Bae-Lee, and G.M. Carman. 1986. Regulation of phosphatidylserine synthase from *Saccharomyces cerevisiae* by phospholipid precursors. *J. Bacteriol.* 168: 668-672.

178. Fernandez, S., M.J. Homann, S.A. Henry, and G.M. Carman. 1986. Metabolism of the phospholipid precursor inositol and its relationship to growth and viability in the natural auxotroph *Schizosaccharomyces pombe*. *J. Bacteriol.* 166: 779-786.

179. Hromy, J.M., and G.M. Carman. 1986. Reconstitution of *Saccharomyces cerevisiae* phosphatidylserine synthase into phospholipid vesicles. Modulation of activity by phospholipids. *J. Biol. Chem.* 261: 15572-15576.

180. Henry, S.A., D. Hoshizaki, A. Bailis, M.J. Homann, and G.M. Carman. 1986. Genetic regulation of phospholipid synthesis in yeast. In Enzymes of lipid metabolism II. Proceedings of the CNRS-INSERM International Symposium and Nato Workshop. (Freysz, L., H. Dreyfus, R. Massarelli, and S. Gatt, eds.), Plenum Publishing Corp., New York, NY. 623-632.

181. Page, G.V., M. Solberg, and G.M. Carman. 1985. Nitrite reductase in *Salmonella typhimurium*. *J. Food Safety* 7: 1-13.

182. Klig, L.S., M.J. Homann, G.M. Carman, and S.A. Henry. 1985. Coordinate regulation of phospholipid biosynthesis in *Saccharomyces cerevisiae*: pleiotropically constitutive *opi1* mutant. *J. Bacteriol.* 162: 1135-1141.

183. Poole, M.A., A.S. Fischl, and G.M. Carman. 1985. Enzymatic detection of phospholipid biosynthetic enzymes after electroblotting. *J. Bacteriol.* 161: 772-774.

184. Cirigliano, M.C., and G.M. Carman. 1985. Purification and characterization of Liposan, a bioemulsifier from *Candida lipolytica*. *Appl. Environ. Microbiol.* 50: 846-850.

185. Homann, M.J., S.A. Henry, and G.M. Carman. 1985. Regulation of CDP-diacylglycerol synthase activity in *Saccharomyces cerevisiae*. *J. Bacteriol.* 163: 1265-1266.

186. Carman, G.M., and A.S. Greenberg. 1984. Membrane-associated phosphatidylglycerophosphate synthase from germinating soybeans. *J. Food Biochem.* 8: 321-333.

187. Bae-Lee, M., and G.M. Carman. 1984. Phosphatidylserine synthesis in *Saccharomyces cerevisiae*. Purification and characterization of membrane-associated phosphatidylserine synthase. *J. Biol. Chem.* 259: 10857-10862.

188. Cirigliano, M.C., and G.M. Carman. 1984. Isolation of a bioemulsifier from *Candida lipolytica*. *Appl. Environ. Microbiol*. 48: 747-750.

189. Fischl, A.S., and G.M. Carman. 1983. Phosphatidylinositol biosynthesis in *Saccharomyces cerevisiae*: purification and properties of microsome-associated phosphatidylinositol synthase. *J. Bacteriol.* 154: 304-311.

190. McKenzie, M.A., and G.M. Carman. 1983. Membrane-associated phosphatidylinositol kinase from *Saccharomyces cerevisiae*. *J. Bacteriol.* 156: 421-423.

191. Letts, V.A., L.S. Klig, M. Bae-Lee, G.M. Carman, and S.A. Henry. 1983. Isolation of the yeast structural gene for the membrane-associated enzyme; phosphatidylserine synthase. *Proc. Natl. Acad. Sci.* 80: 3715-3720.

192. Carman, G.M., and C.J. Belunis. 1983. Phosphatidylglycerophosphate synthase activity in *Saccharomyces cerevisiae*. *Can. J. Microbiol*. 29: 1452-1457.

193. Cirigliano, M.S., and G.M. Carman. 1983. A plating technique for the selective isolation of yeast utilizing water immiscible carbon. *J. Food Sci*. 48: 1554-1555.

194. Homann, M.J., and G.M. Carman. 1983. Detection of phospholipid biosynthetic enzyme activities in *Saccharomyces cerevisiae* by colony autoradiography. *Anal. Biochem*. 135: 447-452.

195. Robinson, M.L., and G.M. Carman. 1982. Solubilization of microsomal-associated phosphatidylinositol synthase from germinating soybeans. *Plant Physiol.* 69: 146-149.

196. Carman, G.M., R.L. Zaniewski, and J.J. Cousminer. 1982. CDP- diacylglycerol synthase activity in *Clostridium perfringens*. *Appl. Environ. Microbiol.* 43: 81-85.

197. McKenzie, M.A., and G.M. Carman. 1982. Solubilization of membrane-associated phosphatidylinositol kinase from *Saccharomyces cerevisiae*. *J. Food Biochem.* 6: 77-86.

198. Cousminer, J.J., A.S. Fischl, and G.M. Carman. 1982. Partial purification and properties of phosphatidylserine synthase from *Clostridium perfringens*. *J. Bacteriol.* 151: 1372-1379.

199. Carman, G.M., G.F. Harrington, and R. Amegah. 1981. Microsomal- associated glycerolphosphate acyltransferase activity in germinating soybeans. *J. Food Biochem.* 5: 185-195.

200. Carman, G.M., and J. Matas. 1981. Solubilization of microsomal-associated phosphatidylserine synthase and phosphatidylinositol synthase from *Saccharomyces cerevisiae*. *Can. J. Microbiol*. 27: 1140-1149.

201. Carman, G.M., A.S. Fischl, M. Dougherty, and G. Maerker. 1981. A spectrophotometric method for the assay of phospholipase D activity. *Anal. Biochem*. 110: 73-76.

202. Cousminer, J.J., and G.M. Carman. 1981. Solubilization of membrane-associated phosphatidylserine synthase from *Clostridium perfringens*. Can. J. Microbiol. 27: 544-546.

203. Carman, G.M., and D.S. Wieczorek. 1980. Phosphatidylglycerophosphate synthase and phosphatidylserine synthase activities in *Clostridium perfringens*. *J. Bacteriol.* 142: 262-267.

204. Carman, G.M., and A.S. Fischl. 1980. Modification of the Agranoff-Suomi method for the synthesis of CDP- diacylglycerol. *J. Food Biochem.* 4: 53-59.

205. Carman, G.M., and M. Dougherty. 1980. Kinetic properties of phosphatidylinositol synthase from germinating soybeans. *J. Food Biochem*. 4: 147-152.

206. Carman, G.M., and M. Dougherty. 1980. Subcellular localization of phosphatidylinositol synthase from germinating soybeans. *J. Food Biochem.* 4: 153-158.

207. Carman, G.M., R. Amegah, and J. Matas. 1980. Mitochondrial- associated CDP-diacylglycerol synthase activity in germinating soybeans. *J. Food Biochem.* 4: 261-272.

208. Carman, G.M., and W. Dowhan. 1979. Phosphatidylserine synthase of *Escherichia coli*. The role of Triton X-100 in catalysis. *J. Biol. Chem.* 254: 8391-8397.

209. Carman, G.M., and S.M. Felder. 1979. A phosphatidylinositol synthase activity from germinating soybean seeds. *J. Food Biochem.* 3: 89-102.

210. Carman, G.M., and W. Dowhan. 1978. A spectrophotometric method for the assay of cytidine 5'diphospho-1,2-diacyl-sn- glycerol dependent enzymes of phospholipid metabolism. *J. Lipid Res*. 19: 519-522.

211. Carman, G.M., and R.E. Levin. 1977. Partial purification and some properties of tyrosine phenol-lyase from *Aeromonas phenologenes* ATCC 29063. *Appl. Environ. Microbiol.* 33: 192-198.

212. Carman, G.M., and R.E. Levin. 1977. Characteristics of tyrosine phenol-lyase from *Aeromonas phenologenes* ATCC 29063. *J. Food Biochem.* 1: 285-299.