

David J. Merkler

Department of Chemistry
University of South Florida
Tampa, FL 33620 USA

Phone: (813)-974-3579
FAX: (813)-974-3203
E-mail: merkler@usf.edu

Web Site: <http://chemistry.usf.edu/faculty/merkler/>

Education: August 1987 – June 1989

Postdoctoral Fellow

Department of Biochemistry
Albert Einstein College of Medicine
Mentor: Dr. Vern L. Schramm

March 1985 – August 1987

Postdoctoral Fellow

Department of Biochemistry
Temple University School of Medicine
Mentor: Dr. Vern L. Schramm

August 1979 – March 1985

Ph.D.

Biochemistry Program
Pennsylvania State University
Mentor: Dr. Frederick C. Wedler

August 1975 – May 1979

B.A.

Department of Chemistry and Biochemistry
University of Maryland, Baltimore County
Mentor: Dr. Richard L. Karpel

Professional Experience:

August 2008 – present

Professor

Department of Chemistry
University of South Florida

March 2014 – present

Faculty Director

Science in Florence Program
USF World
University of South Florida

August 1999 – May 2008

Associate Professor

Department of Chemistry
University of South Florida

August 1995 – July 1999

Associate Professor

Department of Chemistry and Biochemistry
Duquesne University

January 1994 – July 1995

Senior Research Scientist

Analytical Protein & Organic Chem. Group
Unigene Laboratories, Inc.

July 1989 – December 1993

Senior Scientist

Analytical Protein & Organic Chem. Group
Unigene Laboratories, Inc.

Honors and Awards:

- 2018 Invited Speaker, 10th International on Chemistry Education & Research (Oslo, Norway: 21-22 June 2018)
- 2018 Invited Speaker, The Florida Annual Meeting and Exposition of the American Chemical Society (FAME) (N. Palm Harbor, FL: 3-5 May 2018)
- 2018 Invited Speaker, 11th Annual World Protein & Peptide Conference-2018 (PepCon-2018) (Miami, FL: 26-28 March 2018)
- 2018 Invited Speaker, 3rd International Conference Enzymology and Molecular Biology (London, UK: 5-7 March 2018)
- 2016 Invited Speaker, Trail Blazer Lecture Series, University of South Florida (Tampa, FL: 4 February 2016)
- 2015 Invited Speaker, The Florida Annual Meeting and Exposition of the American Chemical Society (FAME) (N. Palm Harbor, FL: 7-9 May 2015)
- 2013 Invited Speaker, 8th Annual Conference on Difficult to Express Proteins (Boston, MA: 29-30 April 2013)
- 2008 Invited Speaker, Trends in Enzymology 2008 (TinE) (Saint Malo, France: 2-5 July 2008)
- 2000 Invited Speaker, Aegean Conference on Lymphocyte Signal Transduction (Santorini, Greece: 16-20 October 2000)
- 1998 Invited Speaker, Gordon Research Conference on Enzymes, Coenzymes, and Metabolic Pathways (Meriden, NH: 12-17 July 1998)
- 1996 Invited Speaker, 212th National Meeting of the American Chemical Society (Orlando, FL: 25-29 August 1996)
- 1995 Invited Speaker, Manzianna'95 Symposium on Copper in Biological Systems (Santa Severa, Italy: 11-15 September 1995)
- 1994 Invited Speaker, Gordon Research on Hormonal and Neural Peptide Biosynthesis (Plymouth, NH 7-12 August 1994)
- 1988 Travel Award from the American Chemical Society to attend the 14th International Union of Biochemistry (IUB) Conference (Prague, Czechoslovakia)
- 2009 - present Editorial Board, *Biochimica et Biophysica Acta*
- 2002 - present Editorial Board, *Archives of Biochemistry and Biophysics*
- 2002 - present Editorial Board, *Protein Purification and Expression*
- 1985-1988 NIH Postdoctoral Fellowship (GM 10599)

Manuscripts Currently Under Review from my *Independent Career*:

- (a) Battistini, M.R., O'Flynn, B.G., Shoji, C., Suarez, G., Galloway, L.C., and **Merkler, D. J.**,* (201X) *Bm*-iAANAT3: Expression and Characterization of a Novel Arylalkylamine *N*-Acytransferase from *Bombyx mori*. *Arch. Biochem. Biophys.* (*submitted, revised manuscript under review*).
- (b) Kim, M., Snowden, S. Ali, A., **Merkler, D.J.**, Ahmad, T., Westwood, S., Baird, A., Proitsi, P., Nevado-Holgado, A., Hye, A., Ashton, N., Bos, I., Vos, S., Vandenberghe, R., Teunissen, C., Scheltens, P., Gabel, S., Meersmans, K., Blin, O., Richardson, J., Slegers, K., Bordet, R., Rami, L., Kettunen, P., Tsolaki, M., Verhey, F., Sala, I., Lléo, A., Peyratout, G., Tainta, M., Johannsen, P., Freund-Levi, Y., Frölich, L., Dobricic, V., Engelborghs, S., Frisoni, G., Molinuevo, L.J., Wallin, A., Popp, J., Martinez-Lage, P., Bertram, L., Barkhof, F., Zetterberg, H., Streffer, J., Visser, P.J., Lovestone, S., and Cristina Legido-Quigley, C.*(201X) Primary fatty amides in plasma associate to brain amyloid burden, hippocampal volume and memory in the EMIF-AD biomarker discovery cohort. *Mol. Psychiatry* (*submitted*)

Publications from my *Independent Career*:

- (83) Anderson, R.L., Battistini, M.R., Wallis, D.J., Shoji, C., O'Flynn, B.G., Dillashaw, J.E., and **Merkler, D.J.*** (2018) *Bm-iAANAT* and Its Potential Role in Fatty Acid Amide Biosynthesis in *Bombyx mori*. *Prostaglandins Leukot. Essent. Fatty Acids*. **135**, 10-17.
- (82) O'Flynn, B.G., Suarez, G., Hawley, A.J., and **Merkler, D.J.*** (2018) Insect Arylalkylamine *N*-Acetyltransferase: Mechanism and Role in Fatty Acid Amide Biosynthesis. *Front. Mol. Biosci.* **5**:66.
- (81) O'Flynn, B.G., Hawley A.J., and **Merkler, D.J.*** (2018) Insect Arylalkylamine *N*-Acetyltransferases as Potential Targets for Novel Insecticide Design. *Biochem. Mol. Biol. J.* **4**:4 (doi: 10.21767/2471-8084).
- (80) Handa, S., Dempsey, D.R., Ramamoorthy, D., Cook, N., Guida, W.C., Spradling, T.J., White, J.K., Woodcock, H.L., and **Merkler, D.J.*** (2018) Mechanistic Studies of 1-Deoxy-D-Xylulose-5-Phosphate Synthase from *Deinococcus radiodurans*. *Biochem. Mol. Biol. J.* **4**:2 (doi: 10.21767/2471-8084.100051).
- (79) Dempsey, D.R., Nichols, D.A., Battistini, M.R., Pemberton, O., Rodriguez-Ospina, R., Zhang, X., Carpenter, A.-M., O'Flynn, B.G., Leahy, J.W., Kanwar, A., Lewandowski, E.M., Chen, Y.*, and **Merkler, D.J.*** (2017) Structural and Mechanistic Analysis of *Drosophila melanogaster* Agmatine *N*-Acetyltransferase, an Enzyme that Catalyzes the Formation of *N*-Acetylarginine. *Sci. Rep.* **7**:13432.
- (78) Anderson, R.L., and **Merkler, D.J.*** (2017) *N*-Fatty Acylglycines: Underappreciated Endocannabinoid-like Fatty Acid Amides? *J. Biol. Nat.* **8**, 156-165.
- (77) Aboalroub, A.A., Bachman, A.B., Zhang, Z., Keramisanou, D., **Merkler, D.J.**, and Gelis, I.* (2017) Acetyl Group Coordinated Progression through the Catalytic Cycle of an Arylalkylamine *N*-Acetyltransferase. *PLoS One* **12**:e0177270.
- (76) Jeffries, K.A., Dempsey, D.R., Farrell, E.K., Garbade, G.J., Gurina, T., Gruhonjic, I., and **Merkler, D.J.*** (2016) Glycine *N*-Acyltransferase Like 3 is Responsible for Long-chain *N*-Acylglycine Formation in N₁₈TG₂ Cells. *J. Lipid Res.* **57**, 781-790.
- (75) White, J.K., Handa, S., Vankayala, S.L., **Merkler, D.J.**, and Woodcock, H.L.* (2016) Thiamin Diphosphate Activation in 1-Deoxy-D-Xylulose-5-Phosphate Synthase: Insights into the Mechanism and Underlying Intermolecular Interactions. *J. Phys. Chem. B.* **120**, 9922-9934.
- (74) Jeffries, K.A., Dempsey, D.R., Farrell, E.K., Garbade, G.J., Gurina, T., Gruhonjic, I., and **Merkler, D.J.*** (2016) Glycine *N*-Acyltransferase Like 3 is Responsible for Long-chain *N*-Acylglycine Formation in N₁₈TG₂ Cells. *J. Lipid Res.* **57**, 781-790.
- (73) Battistini, M.R., Shoji, C., Handa, S., Breydo, L., and **Merkler, D.J.*** (2016) Mechanistic Binding Insights for 1-Deoxy-D-Xylulose-5-Phosphate Synthase, the Enzyme Catalyzing the First reaction of Isoprenoid Biosynthesis in the Malaria-causing Protists, *Plasmodium falciparum* and *Plasmodium vivax*. *Protein Exp. Purif.* **120**, 16-27.
- (72) Battistini, M.R., Mahajan, S., Diaz, D., Shaw, L.N., and **Merkler, D.J.*** (2016) A Facile, Microwave-Assisted Synthesis of an Adenosine-Ribose Probe for Binding-Based Profiling of Nucleoside and Nucleotide-Binding Proteins. *Curr. Microwave Chem.* **3**, 124-130.
- (71) McIntyre, N.R., Lowe, E.W., Jr., Battistini, M.R., Leahy, J.W., and **Merkler, D.J.*** (2016) Inactivation of Peptidylglycine α -Hydroxylating Monooxygenase by Cinnamic Acid Analogs. *J. Enzyme Inhib. Med. Chem.* **31**, 551-562.
- (70) Dempsey, D.R., Jeffries, K.A., Handa, S., Carpenter, A.-M., Rodriguez-Ospina, S., Breydo, L., and **Merkler, D.J.*** (2015) Mechanistic and Structural Analysis of a *Drosophila melanogaster* Enzyme, Arylalkylamine *N*-Acetyltransferase Like 7, an Enzyme That Catalyzes the Formation of *N*-Acetylarylalkylamides and *N*-Acetylhistamine. *Biochemistry* **54**, 2644-2658.

- (69) Dempsey, D.R., Carpenter, A.-M., Rodriguez-Ospina, R., **Merkler, D.J.*** (2015) Probing the Chemical Mechanism and Critical Regulatory Amino Acid Residues of *Drosophila melanogaster* Arylalkylamine *N*-Acyltransferase Like 2. *Insect Biochem. Mol. Biol.* **66**, 1-12.
- (68) Mahajan, S., Manetsch, R., **Merkler, D.J.**, and Stevens, S.M., Jr.* (2015) Synthesis and Evaluation of a Novel Adenosine-Ribose Probe for Global-Scale Profiling of Nucleoside and Nucleotide-Binding Proteins. *PLoS One* **10**:e0115644.
- (67) Dempsey, D.R., Jeffries, K.A., Bond, J.D., Carpenter, A.-M., Rodriguez-Ospina, S., Breydo, L., Caswell, K.K., and **Merkler, D.J.*** (2014) Mechanistic and Structural Analysis of *Drosophila melanogaster* Arylalkylamine *N*-Acetyltransferases. *Biochemistry* **53**, 7777-7793.
- (66) Jeffries, K.A., Dempsey, D.R., Behari, A.L., Anderson, R.L., and **Merkler, D.J.*** (2014) *Drosophila melanogaster* as a Model System to Study Long-chain Fatty Acid Amide Metabolism. *FEBS Lett.* **288**, 1596-1602.
- (65) Dempsey, D.R., Jeffries, K.A., Anderson, R.L., Carpenter, A.-M., Rodriguez-Ospina, S., and **Merkler, D.J.*** (2014) Identification of an Arylalkylamine *N*-Acyltransferase from *Drosophila melanogaster* that Catalyzes the Formation of Long-chain *N*-Acylserotonins. *FEBS Lett.* **588**, 594-599.
- (64) Dempsey, D.R., Bond, J.D., Carpenter, A.-M., Rodriguez-Ospina, S., and **Merkler, D.J.*** (2014) Expression, Purification, and Characterization of Mouse Glycine *N*-Acyltransferase in *Escherichia coli*. *Protein Exp. Purif.* **97**, 23-28.
- (62) Waluk, D.P., Battistini, M.R., Dempsey, D.R., Farrell, E.K., Jeffries, K.A., Mitchell, P., Hernandez, L.W., McBride, J.C., **Merkler, D.J.**, and Hunt, M.C.* (2014) Mammalian Fatty Acid Amides of the Brain and CNS. *In Omega-3 Fatty Acids in Brain and Neurological Health* (Watson, R.R., and DeMeester, F, Eds.), pp. 87-107, Academic Press, London.
- (61) Ramamoorthy, D., Handa, S., **Merkler, D.J.**, and Guida, W.C.* (2014) *Plasmodium vivax* 1-Deoxy-D-Xylulose-5-Phosphate Synthase: Homology Modeling, Domain Swapping, and Virtual Screening. *J. Data Mining Genomics Proteomics* **S1**:003 (doi: 10.4172/2153-0602).
- (60) Handa, S., Ramamoorthy, D., Spradling, T.J., Guida, W.C., Adams, J.H., Bendinskas, K.G., and **Merkler, D.J.*** (2013) Production of Recombinant 1-Deoxy-D-Xylulose-5-Phosphate Synthase from *Plasmodium vivax* in *Escherichia coli*. *FEBS Open Bio* **3**, 124-129.
- (57) Farrell, E.K., Chen, Y., Barazanji, M., Jeffries, K.A., Cameroamortegui, F., and **Merkler D.J.*** (2012) Primary Fatty Acid Amide Metabolism: Conversion of Fatty Acids and an Ethanolamine in N₁₈TG₂ and SCP cells. *J. Lipid Res.* **53**, 247-256.
- (56) An, Z., Chen, Y., Koomen, J. M., and **Merkler, D. J.*** (2012) A Mass Spectrometry-Based Method to Screen for α -Amidated Peptides. *Proteomics* **12**, 173-182.
- (55) Handa, S., Spradling, T.J., Dempsey, D.R., and Merkler, D. J. (2012) Production of the Catalytic Core of Human Peptidylglycine α -Hydroxylating Monooxygenase (PHMcc) in *Escherichia coli*. *Protein Exp. Purif.* **84**, 9-13.
- (54) Ivkovic, M., Dempsey, D.R., Handa, S., Hilton, J.H., Lowe, E.W. Jr., and **Merkler, D. J.*** (2011) *N*-Acylethanolamines as Novel Alcohol Dehydrogenase 3 Substrates. *Arch. Biochem. Biophys.* **506**, 157-164.
- (53) McIntyre, N.R., Lowe, E.W., Jr., Belof, J.L., Ivkovic, M., Shafer, J., Space, B., and **Merkler, D.J.*** (2010) Evidence for Substrate Preorganization in the Peptidylglycine α -Amidating Monooxygenase Reaction Describing the Contribution of Ground State Structure to Hydrogen Tunneling. *J. Am. Chem. Soc.* **132**, 16393-16402.
- (52) McIntyre, N.R., Lowe, E.W., Jr., and **Merkler, D.J.*** (2009) The Imino-Oxy Dealkylation as Evidence for an Inner-Sphere Alcohol Intermediate in the Reaction Catalyzed by Peptidylglycine α -Amidating Hydroxylase (PHM). *J. Am. Chem. Soc.* **131**, 10308-10319.

- (51) **Merkler, D. J.*** Asser, A.S., Baumgart L.E., Carballo, N., Baumgart L.E., Carpenter S.E., Chew, G.H., Cosner, C.C., Dusi, J., Galloway, L.C., Lowe A.B., Lowe, E.W., Jr., King, L., 3rd, Kendig, R.D., Kline, P.C., Malka, R., Merkler, K.A., McIntyre, N.R., Romero, M., Wilcox, B.J., and Owen, T.C. (2008) Substituted Hippurates and Hippurate Analogs as Substrates and Inhibitors of Peptidylglycine α -Hydroxylating Monooxygenase. *Bioorg. Med. Chem.* **16**, 10061-10074.
- (50) Farrell, E.K., and **Merkler, D.J.*** (2008) The Biosynthesis, Degradation and Pharmacological Importance of Fatty Acid Amides. *Drug Discov. Today* **13**, 558-568.
- (49) McIntyre, N.R., Lowe, E. W. Jr., Chew, G.H., Owen, T.C., and **Merkler, D. J.*** (2006) Thiorphan, Tiopronin, and Related Analogs as Substrates and Inhibitors of Peptidylglycine α -Amidating Monooxygenase (PAM). *FEBS Lett.* **580**, 521-532.
- (48) Weiss, S.T., McIntyre, N.R., McLaughlin, M.L., and **Merkler D.J.*** (2006) The Development of Molecular Clamps as Drugs. *Drug Discov. Today* **11**, 819-824.
- (47) Chew, G.H., Galloway, L.C., McIntyre, N.R., Schroder, L.A., Richards, K.M., Miller, S.A., Wright, D.W., and **Merkler, D.J.*** (2005) Ubiquitin and Ubiquitin-derived Peptides as Substrates for Peptidylglycine α -Amidating Monooxygenase. *FEBS Lett.* **579**, 4678-4684.
- (46) Shonsey, E.M., Sfakianos, M., Johnson, M., He, D., Falany, C.N., Falany, J., **Merkler D.J.**, and Barnes, S.* (2005) Bile Acid coenzyme A:Amino Acid *N*-Acyltransferase in the Amino Acid Conjugation of Bile Acids. *Methods Enzymol.* **400**, 374-394.
- (45) **Merkler, D.J.*** Chew, G.H., Gee, A.J., Merkler, K.A., Sorondo, J.-P.O., and Johnson, M.E.* (2004) Oleic Acid Derived Metabolites in Mouse Neuroblastoma N₁₈TG₂ Cells. *Biochemistry* **43**, 12667-12674.
- (44) Francisco, W.A., Wille, G., Smith, A.J., **Merkler, D.J.**, and Klinman, J.P.* (2004) Investigation of the Pathway for Inter-Copper Electron Transfer in Peptidylglycine α -Amidating Monooxygenase. *J. Am. Chem. Soc.* **126**, 13168-13169.
- (43) Owen, T.C.,* and **Merkler, D.J.** (2004) A New Proposal for the Mechanism of Glycine Hydroxylation as Catalyzed by Peptidylglycine α -Hydroxylating Monooxygenase. *Med. Hypothesis* **62**, 392-400.
- (42) Carpenter, T., Poore, D.D., Gee, A.J., Deshpande, P., **Merkler, D.J.**, and Johnson, M.E.* (2004) The Reverse Phase HPLC Separation of *N*-Acylglycines and Primary Fatty Acid Amides. *J. Chromatogr. B.* **809**, 15-21.
- (41) Miller, L.A., Baumgart, L.E., Chew, G.H., deLong, M.A., Galloway, L.C., Jung, K.W., Merkler, K.A., Nagle, A.S., Poore, D.D., Yoon, C.H., and **Merkler, D.J.*** (2003) Glutathione, S-Alkylated Glutathiones, and LTC₄ as Substrates for Peptidylglycine α -Amidating Monooxygenase. *Arch. Biochem. Biophys.* **412**, 3-12.
- (40) Carpenter, S.E., and **Merkler, D.J.*** (2003) An Enzyme-Coupled Assay for Glyoxylic Acid. *Anal. Biochem.* **323**, 242-246.
- (39) Ritenour-Rodgers, K.J., Driscoll, W.J., Merkler, K.A., **Merkler, D.J.**, and Mueller, G.P.* (2000) Induction of Peptidylglycine α -Amidating Monooxygenase (PAM) in N₁₈TG₂ Cells: A Model for Studying Oleamide Biosynthesis. *Biochem. Biophys. Res. Commun.* **267**, 521-526.
- (38) DeBlassio, J.L., deLong, M.A., Glufke, U., Kulathila, R., Merkler, K.A., Vederas, J.C., and **Merkler, D.J.*** (2000) The Amidation of Salicylic Acid and Gentisuric Acid. A Possible Role for Peptidylglycine α -Amidating Monooxygenase (PAM) in the Metabolism of Aspirin. *Arch. Biochem. Biophys.* **383**, 46-55.
- (37) King, L., III, Barnes, S., Glufke, U., Henz, M.E., Kirk, M., Merkler, K.A., Vederas, J.C., Wilcox, B.J., and **Merkler, D.J.*** (2000) The Enzymatic Formation of Novel Bile Acid Primary Amides. *Arch. Biochem. Biophys.* **374**, 107-117.

- (36) Wilcox, B.J., Ritenour-Rodgers, K.J., Asser, A.S., Baumgart, L.E., Baumgart, M.A., Boger, D.L., DeBlassio, J.L., deLong, M.A., Glufke, U., Henz, M.E., King, L., III, Merkler, K.A., Patterson, J.E., Robleski, J.J., Vederas, J.C., and **Merkler, D.J.*** (1999) *N*-Acylglycine Amidation: Implications for the Biosynthesis of Fatty Acid Primary Amides. *Biochemistry* **38**, 3235-3245.
- (35) **Merkler, D.J.**, Glufke, U., Ritenour-Rodgers, K.J., Baumgart, L.E., DeBlassio, J.L., Merkler, K.A., and Vederas, J.C.* (1999) Formation of Nicotinamide from Nicotinuric Acid by Peptidylglycine α -Amidating Monooxygenase (PAM): A Possible Alternative Route from Nicotinic Acid (Niacin) to NADP in Mammals. *J. Am. Chem. Soc.* **121**, 4904-4905.
- (34) Kulathila, R., Merkler, K.A., and **Merkler, D.J.*** (1999) The Enzymatic Formation of C-Terminal Amides. *Nat. Prod. Rep.* **16**, 145-154.
- (33) Merkler, K.A., Baumgart, L.E., DeBlassio, J.L., Glufke, U., King, L., III, Ritenour-Rodgers, K.J., Vederas, J.C., Wilcox, B.J., and **Merkler, D.J.*** (1999) A Pathway for the Biosynthesis of Fatty Acid Amides. *Adv. Exp. Med. Biol.* **469**, 519-525.
- (32) Francisco, W.A., **Merkler, D.J.**, Blackburn, N.J., and Klinman, J.P.* (1998) Kinetic Mechanism and Intrinsic Isotope Effects for the Peptidylglycine α -Amidating Enzyme Reaction. *Biochemistry* **37**, 8244-8252.
- (31) Bell, J., Ash, D.E.,* Snyder, L.M., Kulathila, R., Blackburn, N.J.,* and **Merkler, D.J.*** (1997) Structural and Functional Investigations on the Role of Zinc in Bifunctional Rat Peptidylglycine α -Amidating Enzyme. *Biochemistry* **36**, 16239-16246.
- (30) **Merkler, D.J.,*** Merkler, K.A., Stern, W., and Fleming, F.F. (1996) Fatty Acid Amide Biosynthesis: A Possible New Role for Peptidylglycine α -Amidating Enzyme and Acyl Coenzyme A:Glycine *N*-Acyltransferase. *Arch. Biochem. Biophys.* **330**, 430-434
- (29) Boswell, J.S., Reedy, B.J., Kulathila, R., **Merkler, D.J.**, and Blackburn, N.J.* (1996) Recombinant Bifunctional Peptidylglycine α -Amidating Enzyme. Structural Investigations on the Coordination Environment of the Active-Site Copper Centers in Oxidized, Reduced, and Substrate-Bound-Reduced Forms. *Biochemistry* **35**, 12241-12250.
- (28) **Merkler, D.J.,*** Kulathila, R., and Ash, D.E. (1995) The Inactivation of Bifunctional Peptidylglycine α -Amidating Enzyme by Benzylhydrazine: Evidence that the Two Enzyme-bound Copper Atoms are Nonequivalent. *Arch. Biochem. Biophys.* **317**, 93-102.
- (27) **Merkler, D.J.,*** Kulathila, R., Francisco, W.A., Bell, J., and Ash, D.E. (1995) The Irreversible Inactivation of Two Copper-Dependent Monooxygenases by Sulfite: Bifunctional Peptidylglycine α -Amidating Enzyme and Dopamine β -Monooxygenase. *FEBS Lett.* **366**, 165-169.
- (26) Kulathila, R., Consalvo, A.P., Fitzpatrick, P.F., Freeman, J.C., Snyder, L.M., Villafranca, J.J., and **Merkler, D.J.*** (1994) Bifunctional Peptidylglycine α -Amidating Enzyme Requires Two Copper Atoms for Maximal Activity *Arch. Biochem. Biophys.* **311**, 191-195.
- (25) **Merkler, D.J.*** (1994) C-Terminal Amidated Peptides: The Importance of the Amide to Bioactivity and Production by *In Vitro* Enzymatic Amidation of Glycine-Extended Peptides. *Enzyme Microb. Technol.* **16**, 450-456.
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- (23) **Merkler, D.J.,*** Kulathila, R., Young, S.D., Freeman, J., Villafranca, J. J. (1993) The Enzymology of Peptide Amidation. *In* Bioinorganic Chemistry of Copper (Karlin, K.D. and Tyeklár, Z., Eds.), pp. 196-209, Chapman & Hall, New York.
- (22) Ray, M.V.L,* Van Duyne P., Bertelsen, A.H., Jackson-Matthews, D.E., Sturmer, A.M., **Merkler, D.J.**, Consalvo, A.P., Young, S.D., Gilligan, J.P., and Shields, P.P. (1993) Production of Recombinant Salmon Calcitonin by *In Vitro* Amidation of an *Escherichia coli* Produced Precursor Peptide. (1993) *Bio/Technology* **11**, 64-70.

- (21) **Merkler, D.J.*,** Kulathila, R., Consalvo, A.P., Young, S.D., and Ash, D.E. (1992) ^{18}O -Isotopic ^{13}C -NMR Shift as Proof that Bifunctional Peptidylglycine α -Amidating Enzyme is a Monooxygenase. *Biochemistry* **31**, 7282-7288.
- (20) **Merkler, D.J.*,** Kulathila, R., Tamburini, P.P., and Young, S.D. (1992) Selective Inactivation of the Hydroxylase Activity of Bifunctional Rat Peptidylglycine α -Amidating Enzyme. *Arch. Biochem. Biophys.* **294**, 594-602.
- (19) Bongers, J., Felix, A.M., Campbell, R.M., Lee, Y., **Merkler, D.J.***, and Heimer, E.P.* (1992) Semisynthesis of Human Growth Hormone-releasing Factors by α -Amidating Enzyme Catalyzed Oxidation of Glycine-extended Precursors. *Pept. Res.* **5**, 183-189.
- (18) Consalvo, A.P.,* Young, S.D., and **Merkler, D.J.** (1992) A Rapid Fluorimetric Assay for the Detection of the Peptidylglycine α -Amidating Enzyme Intermediate Using High Performance Liquid Chromatography. *J. Chromatogr.* **607**, 25-29.
- (17) Miller, D.A.,* Sayad, K.U., Kulathila, R., Beaudry, G.A., **Merkler, D.J.**, and Bertelsen, A.H. (1992) Characterization of Bifunctional Peptidyl α -Amidating Enzyme Expressed in Chinese Hamster Ovary Cells. *Arch. Biochem. Biophys.* **298**, 380-388.
- (16) Bongers, J., Heimer, E.P., Campbell, R.M., Felix, A.M., and **Merkler, D.J.*** (1992) α -Amidating Enzyme Catalyzed Synthesis of Peptide-Amides from Glycine-Extended Precursors: Human Growth Hormone Releasing Factor and Analogs as Examples. *In Peptides: Chemistry and Biology, Proceedings of the 12th American Peptide Symposium* (Smith, J.A. and Rivier, J.E., Eds.), pp. 458-459, ESCOM Science Publishers B.V., Leiden, The Netherlands.
- (15) **Merkler, D.J.*,** and Young, S.D. (1991) Recombinant Type A 75 kDa α -Amidating Enzyme Catalyzes the Conversion of Glycine Extended Peptides to Peptide Amides via an α -Hydroxyglycine Intermediate. *Arch. Biochem. Biophys.* **289**, 192-196.

Publications from my Postdoctoral Fellowship Experience:

- (14) Schramm, V.L.,* Horenstein, B.A., Bagdassarian, C.K., Schwartz, S.D., Berti, P. J., Rising, K.A., Scheuring, J., Kline, P.C., Parkin, D.W., and **Merkler, D.J.** (1996) Enzymatic Transition States and Inhibitor Design from Principles of Classical and Quantum Chemistry. *Int. J. Quant. Chem.* **23**, 81-89.
- (13) **Merkler, D.J.**, Kline, P.C., Weiss, P., and Schramm, V.L.* (1993) Transition State Analysis of Yeast AMP Deaminase. *Biochemistry* **32**, 12993-13001.
- (12) **Merkler, D.J.**, and Schramm, V.L.* (1993) Catalytic Mechanism of Yeast AMP Deaminase. Zinc Content, Substrate Specificity, pH Studies, and Solvent Isotope Effects. *Biochemistry* **32**, 5792-5799.
- (11) Sollitti, P., **Merkler, D.J.**, Estupiñán, B., and Schramm, V.L.* (1993) Yeast AMP Deaminase. Catalytic Activity in *Schizosaccharomyces pombe* and Chromosomal Location in *Saccharomyces cerevisiae*. *J. Biol. Chem.* **268**, 4549-4555.
- (10) **Merkler, D.J.**, Brenowitz, M., and Schramm, V.L. * (1990) The Rate Constant Describing Slow-Onset Inhibition of Yeast AMP Deaminase by Coformycin Analogues is Independent Structure. *Biochemistry* **29**, 8358-8364.
- (9) **Merkler, D.J.**, and Schramm, V.L.* (1990) Catalytic and Regulatory Site Composition of Yeast AMP Deaminase by Comparative Binding and Rate Studies: Resolution of the Cooperative Mechanism. *J. Biol. Chem.* **265**, 4420-4426.
- (8) **Merkler, D.J.**, Wali, A.S., Taylor, J., and Schramm, V.L.* (1989) AMP Deaminase from Yeast: Role in AMP Degradation, Large Scale Purification, and Properties of the Native and Proteolyzed Enzyme. *J. Biol. Chem.* **264**, 21422-21430.
- (7) **Merkler, D.J.**, and Schramm, V.L.* (1987) Method for the Enzymatic 5'-Monophosphorylation of Nucleosides. *Anal. Biochem.* **107**, 148-153.

Publications from my *Graduate School Experience*:

- (6) **Merkler, D.J.**, Srikumar, K., Marchese-Ragona, S.P., and Wedler, F.C.* (1988) Aggregation and Thermo-inactivation of Glutamine Synthetase from an Extreme Thermophile, *Bacillus caldolyticus*. *Biochim. Biophys. Acta* **982**, 101-114.
- (5) **Merkler, D.J.**, Srikumar, K., and Wedler, F.C.* (1987) Synergistic Ligand Protection and Intermediates in the Denaturation of Extremely Thermophilic Glutamine Synthetase. *Biochemistry* **26**, 7805-7813.
- (4) Wedler, F.C.,* and **Merkler, D.J.** (1985) Thermostabilization of *Bacillus caldolyticus* Glutamine Synthetase by Intrinsic and Extrinsic Factors. *Curr. Top. Cell. Reg.* **26**, 263-280.
- (3) **Merkler, D. J.**, Farrington, G.K., and Wedler, F.C. (1981) Protein Thermostability: Correlations between Calculated Macroscopic Parameters and Growth Temperature for Closely Related Thermophilic and Mesophilic *Bacilli*. *Int. J. Pept. Protein Res.* **18**, 430-442.
- (2) Wedler, F.C.,* Shreve, D.S., Fisher, K.E., and **Merkler, D.J.** (1981) Complementarity of Regulation for the Two Glutamine Synthetases from *Bacillus caldolyticus*, an Extreme Thermophile. *Arch. Biochem. Biophys.* **211**, 276-287.

Publications from my *Undergraduate Research Experience*:

- (1) Karpel, R.L.,* **Merkler, D.J.**, Flowers, B.K., and Delahunty, M.D. (1981) Involvement of Basic Amino Acids in the Activity of a Nucleic Acid Helix-Destabilizing Protein. *Biochim. Biophys. Acta* **654**, 42-52.

Funding History

- (31) **Agency:** National Institutes of Health - AREA (R15-GM107864-01A1)
Status: Active (currently operating on a no cost extension until 12/18)
Funding Period: 1/15 to 12/18
Role in Project: PI
Title: Subtraction Lipidomics
Total Amount (direct and indirect): \$325,722 for 4-yr. period
- (30) **Agency:** National Institutes of Health (R15-GM107864-01A1-S1)
Status: Active (currently operating on a no cost extension until 12/18)
Funding Period: 1/17 to 12/18
Role in Project: PI/Mentor
Title: Subtraction Lipidomics - Minority Supplement to Gabriela Suarez
Total Amount (direct and indirect): \$60,268 for 2-yr. period
- (29) **Agency:** Creative Scholarship Grant, USF
Status: Complete
Funding Period: 5/17 to 5/18
Role in Project: PI
Title: Reagents for the Interrogation of Fatty Acid Amide Signaling Pathways
Total Amount (direct only): \$9,860 for 1-yr. period
- (28) **Agency:** National Institutes of Health (R21-AA025183)
Status: Unclear*
Funding Period: 9/17 to 8/19
Role in Project: 8% co-PI, PI is Dr. Stanley Stevens (Department of Cell Biology, Microbiology, and Molecular Biology, USF)
Title: Role of Methylation in Ethanol-Induced Microglial Activation
Total Award (direct and indirect): \$421,298
Merkler Lab Amount (direct & indirect): \$30,000 for 3 yr. period

*Dr. Stevens left USF in Dec. 2017 and this joint application was never discussed with me. I have no idea of the outcome of this project. To be honest, it will be very hard for me to contribute to this application without Dr. Stevens presence at USF.

- (27) **Agency:** National Institutes of Health (R03-DA034323-02)
Status: Completed
Funding Period: 8/12 to 7/14
Role in Project: PI
Title: Glycine *N*-Acyltransferases
Total Amount (direct and indirect): \$138,749 for 2-yr. period
- (26) **Agency:** College of Arts & Sciences - CAS Research & Scholarship Grant, USF
Status: Completed
Funding Period: 1/13 to 12/13
Role in Project: PI
Title: Fatty Acid Amide Hydrolase and the Fatty Acid Amidome
Total Awarded (direct only): \$1,500 for 1-yr. period
- (25) **Agency:** Bankhead-Coley Biomedical Research Program, Florida Department of Health (08-BN04)
Status: Completed
Funding Period: 7/08 to 6/12
Role in Project: co-PI (40%), PI was Dr. Roman Manetsch (Department of Chemistry, USF)
Title: Chemical Tools for Proteomic Profiling
Total Amount (direct and indirect): \$375,000 for 4-yr. period
Merkler Lab Amount (direct & indirect): \$150,000 for 4-yr. period
- (24) **Agency:** College of Arts & Sciences (CAS) Faculty International Travel Award
Status: Complete
Funding Period: September 2012
Role in Project: PI and Conference Attendee
Total Amount: \$2,500
These funds were to partially support my attendance at the 22nd IUBMB-37th FEBS Congress, Seville, Spain (4-9 September 2012)
- (33) **Agency:** BITT Seed Grant, USF
Status: Completed
Funding Period: 5/09 to 4/10
Role in Project: PI (87%), co-PIs were Dr. James Garey (10%, Department of Cell Biology, Microbiology, and Molecular Biology, USF) and Dr. John Koomen (3%, Moffitt Cancer and Research Institute)
Title: Long Chain *N*-Acylglycine Metabolism in Mammalian Central Nervous System
Total Amount (direct): \$56,000 for 1-yr. period
Merkler Lab Amount (direct & indirect): \$50,000 for 1-yr. period
- (32) **Agency:** BITT Seed Grant, USF
Status: Completed
Funding Period: 1/09 to 12/10
Role in Project: PI (50%), co-PIs were Dr. Wayne Guida (45%, Department of Chemistry, USF) and Dr. Dennis Kyle (5%, College of Public Health, USF)
Title: Long Chain *N*-Acylglycine Metabolism in Mammalian Central Nervous System
Total Amount (direct only): \$60,000 for 1-yr. period
Merkler Lab Amount (direct only): \$30,000 for 1-yr. period

- (31) **Agency:** BITT Seed Grant, USF
Status: Completed
Funding Period: 5/08 to 4/09
Role in Project: PI (50%), co-PIs were Dr. Roman Manetsch (47%, Department of Chemistry, USF) and Dr. John Koomen (3%, Moffitt Cancer and Research Institute)
Title: Adenylomics
Total Amount (direct only): \$75,000 for 1-yr. period
Merkler Lab Amount (direct only): \$37,500 for 1-yr. period
- (30) **Agency:** Johnnie B. Byrd, Sr. Alzheimer's Center & Research Institute
Status: Completed
Funding Period: 9/08 to 9/09
Role in Project: co-PI (50%), PI was Dr. Roman Manetsch (Department of Chemistry, USF)
Title: Adenylomics and Caffeinylics
Total Amount (direct and indirect): \$78,047 for 1-yr. period
Total Amount (direct and indirect) for Merkler lab: \$35,000 for 1-yr. period
- (29) **Agency:** National Institutes of Health - Phase 2 SBIR (R44-DK063812)
Current Status: Completed
Requested Funding Period: 9/07 to 8/08
Role in Project: co-PI (30%), PI was Angelo Consalvo (Unigene Laboratories, Inc.)
Title: Identification of Novel α -Amidated Peptide Hormones
Total Amount (direct and indirect): \$834,984 for 2-yr. period
Merkler Lab Amount (direct & indirect): \$222,584 for 2-yr. period
- (28) **Agency:** National Institutes of Health – AREA (R15-GM073659)
Status: Completed
Funding Period: 4/05 to 3/08
Role in Project: PI
Title: Enzymatic Cleavage of the C-N Bond in Glycine
Total Amount (direct and indirect): \$217,500 for 3-yr. period
- (27) **Agency:** National Institutes of Health (R03-CA110084)
Status: Completed
Funding Period: 5/05 to 4/07
Role in Project: PI
Title: Proteome Profiling Probes for CoA-Dependent Proteins
Total Amount (direct and indirect): \$145,000 for 2-yr. period
- (26) **Agency:** National Institutes of Health (R21-GM072772)
Status: Completed
Funding Period: 2/05 to 1/07
Role in Project: co-PI (50%), PI was Dr. Mark McLaughlin (Department of Chemistry, USF)
Title: A Molecular Clamp that Inhibits CRF Amidation
Total Amount (direct and indirect): \$188,500 for 2-yr. period
Merkler Lab Amount (direct & indirect): \$94,250 for 2-yr. period
- (25) **Agency:** National Institutes of Health – AREA (R15-GM067257)
Status: Completed
Funding Period: 7/02 to 6/05
Role in Project: PI
Title: Anti-PAM Drugs for the Treatment of Cancer
Total Amount (direct and indirect): \$145,000 for 3-yr. period

- (24) **Agency:** National Institutes of Health - Phase 1 SBIR (R43-DK063812)
Status: Complete
Funding Period: 4/03 to 3/05
Role in Project: co-PI (30%), PI was Angelo Consalvo (Unigene Laboratories, Inc.)
Title: Identification of Novel α -Amidated Peptide Hormones
Total Amount (direct and indirect): \$123,438 for 2-yr. period
Merkler Lab Amount (direct & indirect): \$33,000 for 2-yr. period
- (23) **Agency:** National Institutes of Health – AREA, R15-GM059050
Status: Completed
Funding Period: 4/99 to 3/03
Role in Project: PI
Title: The Biosynthesis of Oleamide and Other Fatty Acid Amides
Total Amount (direct and indirect): \$104,330 for 4-yr. period
- (22) **Agency:** Eppley Foundation for Research, Inc.
Status: Complete
Funding Period: 1/03 to 1/04
Role in Project: PI
Title: Radical Formation during PAM Catalysis
Total Amount (direct and indirect): \$15,328 for 1-yr. period
- (21) **Agency:** Established Researcher and Creative Scholarship Grant, USF
Status: Complete
Funding Period: 1/03 to 12/03
Role in Project: PI
Title: Novel Mammalian Neurochemicals
Total Amount (direct only): \$5,000 for 1-yr. period
- (20) **Agency:** Wendy Will Case Cancer Fund, Inc.
Status: Complete
Funding Period: 9/02 to 8/03
Role in Project: PI
Title: *S*-[Phenyl(thioacyl)]thioglycolates as Novel Anticancer Chemotherapeutics
Total Amount (direct only): \$25,000 for 1-yr. period
- (19) **Agency:** Gustavus & Louise Pfeiffer Research Foundation
Status: Complete
Funding Period: 7/01 to 6/02
Role in Project: PI
Title: Novel Anti-PAM Drugs for the Treatment of Prostate and Breast Cancer
Total Amount (direct only): \$65,600 for 1-yr. period
- (18) **Agency:** Alpha Research Foundation, Inc.
Status: Complete
Funding Period: 1/02 to 12/02
Role in Project: PI
Title: The Biosynthesis of Novel Lipid Amides
Total Amount (direct only): \$5,000 for 1-yr. period
- (17) **Agency:** Milheim Foundation for Cancer Research
Status: Completed
Funding Period: 5/01 to 4/02
Role in Project: PI
Title: Defeating Cancer by Attacking the Supply Lines
Total Amount (direct only): \$13,675 for 1-yr. period

- (16) **Agency:** Florida High Technology Matching Grant Program
Status: Complete
Funding Period: 4/01 to 3/02
Role in Project: co-PI (50%), PI was Dr. Mike Zaworotko (Department of Chemistry, USF)
Title: Biocomposite Materials by Design
Total Amount (direct only): \$20,000 for 1-yr. period
Merkler Lab Amount (direct only): \$10,000 for 1-yr. period
- (15) **Agency:** Goody Two Shoes Foundation, Inc.
Status: Complete
Funding Period: 6/01 – 12/01
Role in Project: PI
Title: Vitamin B₃ Metabolism in Man
Total Amount (direct only): \$5,011 for 6-month period
- (14) **Agency:** Institute for Biomolecular Science, USF
Status: Complete
Funding Period: Summer 2000
Role in Project: PI/Mentor– student supervisor
Title: Summer undergraduate research fellowship
Total Amount (direct only): \$2,500
- (13) **Agency:** USF Faculty International Travel Award
Status: Complete
Funding Period: June 2000
Role in Project: PI and Conference Attendee
Total Amount: \$1,500
These funds were to partially support my attendance at the 11th International Conference on Advances in Prostaglandin and Leukotriene Research: Basic Science and Clinical Applications, 4-8 June 2000 in Florence, Italy.
- (12) **Agency:** Creative Scholarship Grant, University of South Florida
Status: Complete
Funding Period: 1/2000 to 12/2000
Role in Project: PI
Title: A Novel Target for the Treatment of Neurological Dysfunction
Total Amount (direct only): \$7,500 for 1-yr. period
- (11) **Agency:** Laboratory for Education and Research in Neuroscience (L.E.A.R.N.)
Status: Complete
Funding Period: 3/1999 to 2/2000
Role in Project: PI
Title: Cell Signaling in Man: A Novel Neuroactive Lipid
Total Amount (direct only): \$10,000 for 1-yr. period
- (10) **Agency:** Duquesne University Faculty Development Fund
Status: Complete
Funding Period: 1/99 to 12/99
Role in Project: PI
Title: The Biosynthesis of α -Amidated Peptide Hormones in Alfalfa
Total Amount (direct only): \$4,600 for 1-yr. period

- (9) **Agency:** Whitehall Foundation, Inc. - Grant-in-Aid (SA97-04)
Status: Complete
Funding Period: 1/98 to 12/98
Role in Project: PI
Title: Novel Human Neuromodulators and Their Biosynthesis
Total Amount (direct only): \$20,000 for 1-yr. period
- (8) **Agency:** Duquesne University Summer Undergraduate Program
Status: Complete
Funding Period: Summer 1999
Role in Project: PI/Mentor– student supervisor
Title: Summer undergraduate research fellowship
Total Amount (direct only): \$2,700
- (7) **Agency:** Duquesne University Summer Undergraduate Program
Status: Complete
Funding Period: Summer 1998
Role in Project: PI/Mentor– student supervisor
Title: Summer undergraduate research fellowship for two students
Total Amount (direct only): \$5,000
- (6) **Agency:** Duquesne University Faculty Development Fund
Status: Complete
Funding Period: 1/97 to 12/97
Role in Project: PI
Title: Mechanistic and Metabolic Studies of Novel Substrates for Recombinant Peptidylglycine α -Amidating Enzyme (PAM)
Total Amount (direct only): \$5,000 for 1-yr. period
- (5) **Agency:** Human Growth Foundation, Inc.
Status: Complete
Funding Period: 1/96 to 12/96
Role in Project: PI
Title: Development of a Novel Catalyst for the *In Vitro* Production of Growth Hormone Releasing Factor
Total Amount (direct only): \$7,500 for 1-yr. period
- (3) **Agency:** Hunkele Foundation
Status: Complete
Funding Period: 1/96 to 12/96
Role in Project: PI
Title: Amidation of Peptide Hormones and Cancer: Implications for Early Diagnosis and Treatment
Total Amount (direct only): \$7,929 for 1-yr. period
- (4) **Agency:** Bayer Corporation (Pittsburgh, PA)
Status: Complete
Funding Period: 1/96 to 12/96
Role in Project: PI
Title: The Sulfite-Mediated Inactivation of Eukaryotic Tyrosinase
Total Amount (direct only): \$2,500 for 1-yr. period

- (1) **Agency:** National Institutes of Health – Postdoctoral Fellowship (F32-GM010599)
Status: Complete
Funding Period: 7/85 – 5/87
Role in Project: Postdoctoral Fellow (Sponsor: Dr. Vern L. Schramm)
Title: Structure and Mechanism of Yeast AMP Deaminase
Total Amount (direct and indirect): \$64,000 for 3-yr. period