

Matthew J. Picklo, Sr., Ph.D.

Supervisory Research Physiologist/Research Leader
USDA Agricultural Research Service
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A. Vitae

Academic Record: Ph.D., Pharmacology, Vanderbilt University, Nashville, TN 1995
B.A., Biological Sciences, University of Delaware, Newark, DE, 1990

Experience:

2001-2007 Assistant Professor, Department of Pharmacology, Physiology, and Therapeutics, School of Medicine and Health Sciences, University of North Dakota. Full member, graduate faculty of UND.

2007-2009 Associate Professor, Department of Pharmacology, Physiology, and Therapeutics, School of Medicine and Health Sciences, University of North Dakota

2009-Present Associate Professor (adjunct), Department of Pharmacology, Physiology, and Therapeutics, School of Medicine and Health Sciences, University of North Dakota

2004-Present Assistant Professor (adjunct), Department of Chemistry, School of Arts and Sciences, University of North Dakota.

2004-2009 Director of Graduate Programs, Department of Pharmacology, Physiology, and Therapeutics

2009-present Research Leader/Lead Scientist, USDA/ARS Grand Forks Human Nutrition Research Center; Supervisor for Analytical and Cell Culture Facilities

2015, 2016 Co-organizers, Northern Great Plains Lipid Conference.

Education

1986-1990 B.A., University of Delaware, Biological Sciences, cum laude

1990-1995 Ph.D., Vanderbilt University, Pharmacology
Mentor: David Robertson, M.D.

1995-1996 Research Fellow, University College London, Department of Anatomy;
Mentors: Geoffrey Burnstock, D.Sci. and David Latchman, D.Sci.

1996-2001 Research Fellow, Vanderbilt University, Department of Pathology
Mentors: Thomas Montine, M.D., Ph.D. and Doyle Graham, M.D., Ph.D.

2008 "Principles of Management" University of North Dakota. "A" grade; 3 undergraduate level credits.

2010 "Leading Change: Executive Development Seminar" U.S. Office of Personnel Management. 4 credit hours graduate level equivalent

2012 "Science, Technology, and Public Policy" U.S. Office of Personnel Management. 3 credit hours graduate level equivalent

Honors and Awards

1990-1993 NIH Pharmacology Training Grant
1993-1995 NIH SCOR Hypertension Training Grant
1995-1996 Special Trustees Award of Middlesex Hospital, London UK
"Redirecting the Tropism of HSV Vectors", (£16,000 stipend for one year)
1998 Young Investigator Award, Albany Conference on Mitochondrial Research
1998 Young Investigator Award, The Oxygen Society, Washington, D.C.
2006 Visiting Professor Travel Award, University of Rome "Tor Vergata"
2006 Session Chair, 13th International Symposium on the Enzymology and Molecular Biology of Carbonyl Metabolism, July, 2006
2008 Session Chair, 14th International Symposium on the Enzymology and Molecular Biology of Carbonyl Metabolism, July, 2008, Kranjska Gora, Slovenia.
2008 Hermann Esterbauer Award, presented by the HNE-Club, a specialty section of the International Society for Free Radical Research
2010 ChemLuminary Award for Outstanding Leadership Development Program American Chemical Society meeting. Boston, MA.
2010 Northern Plains Area ARS Training Scholarship \$5750 for Executive Development Course
2012 Co-Chair, American Society for Nutrition Symposium "Adipose Dysfunction: Interaction of Reactive Oxygen Species and Inflammation". Experimental Biology 2012, San Diego, CA.

Professional Memberships

American Oil Chemists' Society
Vice-Chair Health and Nutrition Division 2016-2018
American Chemical Society,
Red River Valley Section, Chair 2010, 2012
Chair-Elect 2009
Member-at-Large 2008
2009 and 2010 \$3000 awards for hosting Leadership Development Programs
2010 \$300 for hosting a Science Café
American Society for Nutrition
Dietary Bioactives RIS
Nutrient Gene Interactions RIS
Obesity RIS

Editorial Memberships

Editorial Board Member, *Advances in Nutrition*, 2016-present
Editorial Board Member, *Chemico-Biological Interactions*, 2015-present
Editorial Board Member, *Nutrition Reviews*, 2014-present
Associate Editor, *Lipids*, 2006-present
Associate Editor, *Journal of Alzheimer's Disease*, 2007-2008

Invited Seminars

“Knowledge gaps in energy dense, (un)saturated research” Lipid Nutrition and Metabolism in Human Health, Satellite Meeting of the Canadian Nutrition Society, Winnipeg, MB, May 2015.

“Nutritional and Clinical Aspects of Farmed Fish Intake” American Oil Chemists’ Society, San Antonio, TX, May 2014.

“Developing the Relationship of ARS Aquaculture and Nutrition: Fish Consumption and Omega-3’s”. USDA/ARS National Center for Cold and Cool Water Aquaculture, Kearneysville, WV, July 2012.

“Reactivity and Biological Functions of Oxidized Lipids” Sunrise Free Radical School, Society for Free Radical Biology and Medicine meetings. Orlando, FL. November, 2010.

“Lipids, Oxidative Damage, and Obesity: A Journey from Aldehydes to Insulin”. University of Maryland. Dept of Nutrition and Food Science. December 2009.

“Lipids, Oxidative Damage, and Obesity: A Journey from Aldehydes to Insulin”. Western Human Nutrition Research Center-ARS, Davis, CA, November, 2009.

“Role of lysyl acetylation in alcoholic liver disease”. Keynote Speaker, Department of Pharmacology Retreat, Vanderbilt University, October, 2008.

Invited speaker “Lipid Peroxidation 2008” Karuizawa, Japan. Satellite meeting of the Society for Free Radical Research.

“Oxidation of gamma-hydroxy-2-nonenal in CNS systems”. 12th International Symposium on the Enzymology and Molecular Biology of Carbonyl Metabolism, Nashville, IN. USA, July 2006

"Brain Metabolism of the Endogenous Neurotoxin 4-Hydroxy-2-Nonenal" Department of Biology, Department of Biology, University of Rome Tor Vergata, Rome, Italy, September 2005.

"Metabolism of the Neurotoxic Aldehyde 4-Hydroxy-2-nonenal (HNE) in the Brain". St. Cloud State University, St. Cloud, MN. November 2004.

"Aldehydes and the Brain: More Questions than Answers". Valley City State University, Valley City, ND. April 2004.

“4-Hydroxynonenal metabolism in the CNS.” USDA Human Nutrition Research Laboratory, Grand Forks, ND. October, 2002

“Characterization of CNS aldehyde dehydrogenases that utilize 4-hydroxynonenal.” Tenth International Symposium on the Enzymology and Molecular Biology of Carbonyl Metabolism, Ystad, Sweden. July, 2002.

“ Toxicology of Aldehydes in Neurodegenerative Disease.” Science 2000 Forum. NIEHS, Research Triangle Park, NC. April 2001.

"Neurotoxicology of Aldehydes in Neurodegenerative Disease." Marshall University, Department of Pharmacology, Huntington, WV. February 2001.

B. Research

Interests

My research is guided towards developing nutritional strategies for the prevention of obesity-related diseases including cardiovascular disease and insulin resistance. A major focus of this work is determining the role of dietary fats and oils, particularly from fish and plants in preventing disease. Other interests include determining the role of protein oxidation and lipids peroxidation in disease.

Grant Support:

Current

Disease risk reduction and LCn3-rich rainbow trout. Role: PI. USDA-NIFA. \$498,000. 20% effort. 2013-2018

Food Factors and Prevention of Obesity-Related Disease
USDA/Agricultural Research Service
Role: Scientist Appropriated funds. 95% effort
2015-2019

Past

RO1, "Superoxide production from eNOS: The role of pterins". Role: Collaborator. PI: Jeannette Vasquez-Vivar, Ph.D., Medical College of Wisconsin. Total funds \$119,228. NIH/NHLBI, 10% Effort.

NRSA ES05826-01, "Toxicity of Catechol Thioether Adducts" \$90,000; salary support for three years. Role: PI 1998-2001.

Major Instrumentation Grant, NSF, "Acquisition of an LC/MS/MS System for Chemistry and Medical School Departments", Role: Co-PI. \$255,445. Harmon Abrahamson, PI.

K22 ES 369 ZES1, NIH, "Lipid Peroxidation, Toxicants, and Mitochondria" Role: PI., \$300,000 direct costs

Faculty Seed Money Research Grant, " Analysis of Chiral *trans*-4-Hydroxy-2-nonenal Isomers" Role:PI. \$39,830.

R21 AA15145-01, NIH, "Ethanol, HNE, and the CNS" Role: PI. \$262,500 direct costs. 25% effort

P20 RR17699-01, Center of Biomedical Research Excellence (COBRE), NIH, "Carbonyl Metabolism in the CNS" Role: Project Director, \$750,000 for this project; five years. Jonathan Geiger, PI. 25% Effort

Centers for Disease Control, "Pesticide Impacts on Neurological Disease – Reducing Risks. Role: Project Director, \$38,490. Erin M. O'Leary, Program Director. 5% Effort

UND ND EPSCoR Seed Award. "Structural determinants of ALDH activity" \$17,138. Role: PI.

Glycemic effect of honey. Role: Co-PI. PI: Susan Raatz. USDA/ARS Grand Forks Human Nutrition Research Center. \$66,000. 5% effort 2011-2014

C. Publications

Peer-Reviewed Research

1. **Picklo MJ**, Wiley RG, Lappi D, Robertson D. Noradrenergic lesioning with an anti-dopamine beta-hydroxylase immunotoxin. Brain Research 1994 (666) 195-200.
2. **Picklo MJ**, Wiley RG, Lonce S, Lappi DA, Robertson D. Anti-dopamine beta-hydroxylase immunotoxin-induced sympathectomy in adult rats. The Journal of Pharmacology and Experimental Therapeutics 1995 (275) 1003-1010.
3. Wrenn CC, **Picklo MJ**, Lappi DA, Robertson D, Wiley RG. Central noradrenergic lesioning using anti-DBH-saporin: anatomical findings. Brain Research 1996 (740) 175-184.
4. Montine TJ, **Picklo MJ**, Amarnath V, Amarnath K, Whetsell WO, Graham DG. Neurotoxicity of endogenous cysteinylcatechols. Experimental Neurology 1997 (148) 26-33.
5. **Picklo MJ**, Amarnath V, McIntyre, JO, Graham DG, Montine TJ. 4-Hydroxy-2(E)-nonenal inhibits CNS mitochondrial respiration at multiple sites. The Journal of Neurochemistry 1999 (72) 1617-1624.
6. **Picklo MJ**, Amarnath V, Graham DG, Montine TJ. Catechol thioethers may be pro-oxidant or antioxidant. Free Radical Biology and Medicine 1999 (27) 271-277.
7. **Picklo MJ**, Zhang J, Nguyen V, Graham DG, Montine TJ. HPLC quantitation of cytochrome c using 393 nm detection. Analytical Biochemistry 1999 (276) 166-170.
8. Zhang J, Kravistov A, Amarnath V, **Picklo MJ**, Graham DG, Montine TJ. Catechol mercapturates increase dopamine-induced apoptosis: potential relevance to Parkinson's disease. The Journal of Neurochemistry 2000 (74) 970-978.
9. Neely MD, Zimmermann L, **Picklo MJ**, Ou, JJ, Morales CR, Montine KS, Amarnath V, Montine TJ. Congeners of N-acetyl-L-cysteine but not aminoguanidine act as neuroprotectants from the lipid peroxidation product 4-hydroxy-2-nonenal. Free Radical Biology and Medicine 2000 (29) 1028-1036.
10. **Picklo MJ** and Montine TJ. Acrolein inhibits respiration in isolated brain mitochondria. Biochimica et Biophysica Acta 2001 (1535) 145-152.
11. **Picklo MJ**, Olson S, Markesbery W, Montine TJ. Expression and activities of aldo-keto oxidoreductases in Alzheimer's disease. Journal of Neuropathology and Experimental Neurology 2001 (60) 686-695.

12. **Picklo MJ**, Olson S, Hayes JD, Markesbery W, Montine TJ. Elevation of AKR7A2 (succinic semialdehyde reductase) in neurodegenerative disease. Brain Research 2001 (916) 229-238.
13. Sidell KR, Montine KS, **Picklo MJ**, Olson SJ, Amarnath V, Montine MJ. Mercapturate metabolism of 4-hydroxy-2-nonenal in rat and human cerebrum. Journal of Neuropathology and Experimental Neurology. 2003 (62) 146-153.
14. Nguyen E, and **Picklo MJ**. Inhibition of succinic semialdehyde dehydrogenase by alkenal products of lipid peroxidation. Biochimica et Biophysica Acta : Molecular Basis of Disease. 2003 (1637) 107-112.
15. Murphy T, Amarnath V, **Picklo MJ**. Oxidation of 4-hydroxynonenal in rat brain slices. Chemico-Biological Interactions. 2003 (143-144) 101-105.
16. Murphy T, Amarnath V, **Picklo MJ**. Mitochondrial oxidation of 4-hydroxy-2-nonenal in rat cerebral cortex. Journal of Neurochemistry. 2003 (84) 1313-21.
17. Murphy T, Amarnath V, Gibson KM, and **Picklo MJ**. Oxidation of 4-hydroxy-2-nonenal by succinic semialdehyde dehydrogenase (ALDH5A). Journal of Neurochemistry. 2003 (86) 298-305.
18. Kubatova A, Steckler TS, Gallagher JR, Hawthorne SB, and **Picklo MJ**. Toxicity of wide-range polarity fractions from wood smoke and diesel exhaust particulate obtained using subcritical water. Environmental Toxicology and Chemistry. 2004 (23) 2243-2250.
19. Aberle NS, **Picklo MJ**, Amarnath V, Ren J. Inhibition of cardiac myocyte contraction by 4-hydroxy-*trans*-2-nonenal. Cardiovascular Toxicology. 2004 (4) 21-28.
20. Murphy T, Poppe C, Porter J, Montine TJ, and **Picklo MJ**. 4-Hydroxy-*trans*-2-nonenic acid is a GHB receptor ligand in the cerebral cortex and hippocampus. Journal of Neurochemistry. 2004 (89) 1462-70.
21. Meyer MJ, Mosely DM, and **Picklo MJ**. Metabolism of 4-hydroxy-*trans*-2-nonenal by CNS mitochondria is dependent on age and NAD⁺ availability. Chemical Research in Toxicology. 2004(17) 1272-79.
22. Murphy T, Arntzen R, **Picklo MJ**. Nitrate-based vasodilators inhibit multiple vascular aldehyde dehydrogenases. Cardiovascular Toxicology. 2005 (5) 321-332.
23. Honzatko A, Brichac J, Murphy TC, Reberg A, Kubatova A, Smoliakova IP, **Picklo MJ**. Enantioselective metabolism of *trans*-4-hydroxy-2-nonenal by brain mitochondria. Free Radical Biology and Medicine. 2005 (39), 913-24.
24. Struys EA, Verhoeven NM, Jansen EEW, ten Brink HJ, Gupta M, Burlingame TG, Quang LS, Maher T, Rinaldo P, Snead OC, Goodwin AK, Weerts EM, Murphy TC, **Picklo MJ**, Jakobs C, and Gibson KM. Metabolism of gamma-hydroxybutyrate to D-2-hydroxyglutarate in mammals: further evidence for D-2-hydroxyglutarate dehydrogenase. Metabolism: Clinical and Experimental. 2006 (53), 353-358.
25. Kubatova A, Dronen L, **Picklo MJ**, Hawthorne SB. Midpolarity and nonpolar wood smoke PM fractions deplete glutathione in RAW 264.7 macrophages. Chemical Research in Toxicology. 2006 (19) 255-261.
26. Kubatova A, Murphy T, Combs C, **Picklo MJ**. Astrocytic biotransformation of *trans*-4-hydroxy-2-nonenal is dose-dependent. Chemical Research in Toxicology. 2006 (19) 844-51.
27. Milne G, Morrow JD, **Picklo MJ**. Elevated oxidation of docosahexaenoic acid, 22:6 (n-3), in brain regions of rats undergoing ethanol withdrawal. Neuroscience Letters. 2006 (405) 172-174.
28. Leiphon LJ and **Picklo MJ**. Inhibition of aldehyde detoxification in CNS mitochondria by fungicides. Neurotoxicology. 2007 (28) 143-149.
29. Grimsrud P, **Picklo MJ**, Griffin TJ, Bernlohr D. Carbonylation of adipose proteins in obesity and insulin resistance: Identification of adipocyte fatty acid-binding protein as a

- cellular target of 4-hydroxynonenal. Molecular and Cellular Proteomics. 2007 (6) 624-637.
30. Brichac J, Honzatko A, **Picklo MJ**. Direct and indirect high-performance liquid chromatography enantioseparation of *trans*-4-hydroxy-2-nonenic acid. Journal of Chromatography A (2007) 1149(2) 305-311.
 31. Brichac J, Ho KK, Honzatko A, Wang R, Lu X, Weiner H, and **Picklo MJ**. Enantioselective Oxidation of *Trans*-4-Hydroxy-2-Nonenal is ALDH Isozyme and Mg²⁺-Dependent. Chemical Research in Toxicology. 2007 (20) 887-895.
 32. Honzatko A, Brichac J, and **Picklo MJ**. LC-ESI-MS/MS analysis of *trans*-4-hydroxy-2-nonenal enantiomers and metabolites. Journal of Chromatography B. 2007 857(1):115-22.
 33. Whittsett J, **Picklo MJ**, Vasquez-Vivar J. 4-hydroxy-2-nonenal increases superoxide anion radical in endothelial cells via stimulated GTPcyclohydrolase-1 proteasomal degradation. Atherosclerosis, Thrombosis, and Vascular Biology. 2007 27(11):2340-7.
 34. Long EK, Murphy TC, Leiphon LJ, Watt J, Morrow JD, Milne GL, Howard JRH, **Picklo MJ**. *Trans*-4-Hydroxy-2-hexenal is a neurotoxic product of docosahexaenoic (22:6; *n*-3) acid oxidation. Journal of Neurochemistry. 2008 105(3):714-24.
 35. Long EK, Smoliakova I, Honzatko A, and **Picklo MJ**. Structural Identification of α,β -Unsaturated Aldehydes by GC/MS is Dependent upon Ionization Method. Lipids. 2008 43(8):765-74.
 36. Swenby NP and **Picklo MJ**. The conserved R166 residue of ALDH5A (succinic semialdehyde dehydrogenase) has multiple functional roles. Chemico-Biological Interactions. 2009 178(1-3):70-4
 37. **Picklo MJ**. Ethanol intoxication increases hepatic *N*-lysyl protein acetylation. Biochemical Biophysical Research Communications. 2008 Nov 21;376(3):615-9.
 38. Long EK, Rosenberger TA, **Picklo MJ**. Ethanol withdrawal increases glutathione adducts of 4-hydroxy-2-hexenal but not 4-hydroxyl-2-nonenal in the rat cerebral cortex. Free Radical Biology and Medicine. 2010 48(3):384-90.
 39. **Picklo MJ**, Azenkang A, Hoffmann M. *Trans*-4-oxo-2-nonenal potently alters mitochondrial function. Free Radical Biology and Medicine. 2011Jan 15;50(2):400-7.
 40. Gonnella TP, Leedahl T, **Picklo MJ**. NADH fluorescent analysis of the effects of magnesium ions on ALDH2. Chemico-Biological Interactions. 2011 May 30;191(1-3):147-52.
 41. Uthus EO and **Picklo MJ**. Obesity Reduces Methionine Sulfoxide Reductase Activity in Visceral Adipose Tissue. Free Radical Research. 2011 Sep;45(9):1052-60.
 42. Raatz SK, Young LR, **Picklo MJ**, Sauter ER, Qin W, Kurzer MS. Low Fat Diets Modify Plasma Phospholipid Fatty Acids and Desaturase Activity, and Reduce Urinary Prostaglandin E2. Nutrition Research. 2012 Jan;32(1):1-7.
 43. Raatz SK, Golovko MY, Brose SA, Rosenberger TA, Burr GS, Wolters WR, **Picklo MJ**. Baking Reduces Prostaglandin, Resolvin, and Hydroxy-Fatty Acid Content of Farm-Raised Atlantic Salmon (*Salmo salar*). Journal of Agricultural and Food Chemistry. 2011 Oct 26;59(20):11278-8644.
 44. Vomhof-DeKrey EE, **Picklo MJ**. NAD(P)H:quinone oxidoreductase 1 activity reduces hypertrophy in 3T3-L1 adipocytes. Free Radical Biology and Medicine. 2012; 53:690–700.
 45. Gonnella TP, Keating JM, Kjemhus JA, **Picklo MJ**, Biggane JP. Fluorescence lifetime analysis and effect of magnesium ions on binding of NADH to human aldehyde dehydrogenase 1. Chemico-Biological Interactions. 2013 Feb 25;202(1-3):85-90.
 46. Raatz SK, Rosenberger TA, Johnson LK, Wolters WW, Burr GS, **Picklo MJ**. Dose-dependent consumption of farmed Atlantic salmon (*Salmo salar*) increases plasma

- phospholipid n-3 fatty acids differentially. Journal of the Academy of Nutrition and Dietetics. 2013 Feb;113(2):282-7.
47. **Picklo MJ**, Idso JP, Jackson MI. S-Glutathionylation of Hepatic and Visceral Adipose Proteins Decreases in Obese Rats. Obesity. 2013 Feb; 21(2):297-305.
 48. Cao JJ and **Picklo MJ**. N-acetylcysteine supplementation decreases osteoclast differentiation and improves bone microstructure in mice fed a high-fat diet. Journal of Nutrition. 2014 Mar;144(3):289-96.
 49. Bukowski MR, Bucklin C, **Picklo MJ**. Quantitation of Protein-S-Glutathionylation by LC-MS/MS: Correction for Contaminating Glutathione and Glutathione Disulfide. Analytical Biochemistry, 2015 Jan 15; 469:54-64.
 50. Jahns L, Johnson LK, Mayne ST, Cartmel B, **Picklo MJ**, Sr, Ermakov IV, Gellermann W, Whigham LD. Skin and plasma carotenoid response to a provided intervention diet high in vegetables and fruits: uptake and depletion kinetics. American Journal of Clinical Nutrition. 2014 Sep;100(3):930-7.
 51. **Picklo MJ** and Thyfault JP. Vitamin E and vitamin C do not reduce insulin sensitivity but inhibit mitochondrial protein expression in exercising obese rats. Applied Physiology, Nutrition, and Metabolism. 2015 Apr;40(4):343-52.
 52. Cao JJ and **Picklo MJ**. Involuntary wheel running decreases adiposity, improves but does not fully protect against negative skeletal effects of obesity induced by a high-fat in rats. Calcified Tissue International and Musculoskeletal Research. In press.
 53. Jahns L, Raatz SK, Johnson L, Kranz S, Silverstein JT, **Picklo MJ**. Intake of seafood in the U.S. varies by sex, age, income, and education level but not by race-ethnicity. Nutrients, 2014 Dec 22;6(12):6060-75.
 54. **Picklo M** and Newman JW. Antioxidant supplementation and obesity have independent effects on hepatic oxylipin profiles in insulin resistant, obese-prone rats. Free Radical Biology and Medicine. 2015 Sep 28;89:182-191.
 55. Raatz SK, Johnson LK, **Picklo MJ**. Consumption of honey, sucrose, and high fructose corn syrup produce similar metabolic effects in glucose tolerant and glucose intolerant individuals. Journal of Nutrition. 2015 Oct;145(10):2265-72
 56. Al-Naqeb G, Rousova J, Kubatova A, **Picklo MJ**. Inhibition of 3T3-L1 adipocyte differentiation and modification of cellular antioxidant pathways by *Pulicaria jaubertii* E.Gamal-Eldin. Chemico-Biological Interactions. In press.
 57. Sundaram S, Bukowski M, Lie W-R, **Picklo MJ**, Yan L. High-fat diets containing different amounts of n-3 polyunsaturated acids modulate adipokine production in mice. Lipids. 2016 May;51(5):571-82.
 58. **Picklo MJ** and Murphy EJ. A high-fat, high-oleic diet, but not a high-fat, saturated diet, reduces hepatic alpha-linolenic acid and eicosapentaenoic acid content in mice. Lipids. 2016 May;51(5):537-47.
 59. Raatz SK, Johnson L, **Picklo MJ**. Twice weekly intake of farmed Atlantic salmon (*Salmo salar*) positively influences lipoprotein concentration and particle size in overweight men and women. Nutrition Research. In press.
 60. **Picklo MJ**, Johnson L, Idso J. Peroxisome Proliferator-Activated Receptor Expression is Modified by Dietary n-3 Restriction and Energy Restriction in the Brain and Liver of Growing Rats. Submitted.
 61. Zacek P, Bukowski M, Rosenberger TA, **Picklo MJ**. Quantitation of isobaric phosphatidylcholine species in human plasma using a hybrid quadrupole linear ion-trap mass spectrometer. Journal of Lipid Research, in press.
 62. Ekoue DN, Valyi-Nagy K, Picklo MJ, Lacher C, Hoskins K, Bonini MG, and Diamond AM. Selenium levels in human breast carcinoma tissue are associated with a common polymorphism in the gene for Selenoprotein P. Submitted.

Other Peer-Reviewed Publications

1. **Picklo MJ.** Methods of sympathetic degeneration and alteration. The Journal of the Autonomic Nervous System 1997 (62) 111-125.
2. **Picklo MJ,** Montine TJ, Amarnath, V, and Neely MD. Carbonyl toxicology and Alzheimer's disease. Toxicology and Applied Pharmacology 2002 (184) 187-197.
3. Kubatova A, Honzatko A, Brichac J, Long E, **Picklo MJ.** Analysis of HNE metabolism in CNS models. Redox Report. invited review. 2007 (12) 16-19.
4. **Picklo MJ** and Montine TJ. Mitochondrial Effects of Lipid-Derived Neurotoxins. Invited review. Journal of Alzheimer's Disease. 2007; 12(2) 185-93.
5. Kubatova A, Honzatko A, Brichac J, Long E, **Picklo MJ.** Analysis of HNE metabolism in CNS models. Redox Report. Invited review. 2007 (12) 16-19.
6. Malaspina P, **Picklo MJ,** Jakobs C, Snead OC, and Gibson KM. Comparative Genomics of Aldehyde Dehydrogenase 5A1 (succinate semialdehyde dehydrogenase) and accumulation of gamma-hydroxybutyrate associated with its deficiency. Human Genomics. 2009 Jan;3(2):106-20.
7. Long EK and **Picklo MJ.** *Trans*-4-hydroxy-2-hexenal, a product of *n*-3 fatty acid peroxidation: Make some room HNE.... Free Radical Biology and Medicine. Invited Review. 2010 Jul 1;49(1):1-8.
8. Vomhof-DeKrey E. and **Picklo MJ.** The Nrf2-Antioxidant Response Element Pathway- A Target for Regulating Energy Metabolism. Invited review. Journal of Nutritional Biochemistry. 2012 Oct;23(10):1201-6.
9. Raatz SK, Silverstein JT, Jahns L, **Picklo MJ.** Issues of Fish Consumption for Cardiovascular Disease Risk Reduction. Nutrients. 2013 Mar 28;5(4):1081-97.
10. **Picklo MJ,** Long EK, DeKrey EV. Glutathionyl systems and metabolic dysfunction in obesity. Nutrition Reviews, 2015 Dec;73(12):858-68.

Non-Peer Reviewed Publications

1. Robertson D, Beck C, Gary T, **Picklo M.** Classification of autonomic disorders. International Angiology 1993 (12) 93-102.
2. Robertson D, **Picklo MJ.** Gene therapy enters the clinical arena. Drug Therapy 1993 (10), 71-74.
3. Montine TJ, Amarnath V, **Picklo MJ,** Sidell KR, Zhang J, Graham DG. Dopamine mercapturate can augment dopaminergic neurodegeneration. Drug Metabolism Reviews 2000 (32) 363-376.
4. Graham DG, **Picklo MJ,** Zhang J, Montine TJ. Roles of Quinones in catechol toxicity. in The Role of Catechol Quinone Species in Cellular Toxicity; 1999 Editor C.R. Creveling;. F.P.Graham.
5. Montine TJ, Amarnath V, **Picklo MJ,** Sidell KR, Zhang J, Graham DG. Endogenous brain catechol thioethers in dopaminergic degeneration. in Neurotoxic Factors in Parkinson's Disease and Related Disorders; 2001 Eds. A.Storch and M.A. Collins. Kluwer Academic.
6. **Picklo MJ.** Autonomic Disorders in Animals. in Primer of the Autonomic Nervous System; 2003 Eds. D Robertson, P Low, G Burnstock, and I Biaggioni. Academic Press.
7. Montine KS, Sidell KR, **Picklo MJ,** and Montine TJ. Metabolism of endogenous neurotoxins in neurodegenerative diseases. Recent Research Developments in Human Pathology. 2003 (1) 63 - 76.

8. Poppe C, Murphy TC, Montine TJ, **Picklo MJ**. 4-Hydroxy-*trans*-2-nonenal is oxidized by ALDH3A and ALDH5A in the human brain. Proceedings of the 12th Meeting on the Enzymology and Molecular Biology of Carbonyl Metabolism. Purdue Press. 2005.
9. **Picklo, MJ**. The disposition of lipid-derived carbonyls in Alzheimer's disease. in Oxidative Stress and Age-Related Neurodegeneration; 2005 Eds. Y Luo and L Packer. Taylor and Francis Press.
10. Brichac J, Honzatko A, Leiphon L, and **Picklo MJ**. *Trans*-4-hydroxy-2-nonenal (HNE), a biochemical tool (...as well as a toxin). Proceedings of the 13th Meeting on the Enzymology and Molecular Biology of Carbonyl Metabolism. Purdue Press. 2007.
11. **Picklo MJ**. "So you were volunteered to be a graduate director..." Young Chemists Committee Newsletter, American Chemical Society, 2009.
12. **Picklo MJ**. "Anti-oxidants in food: what are they, how are they measured, and what are they really doing?" Grand Forks Herald, Grand Forks, ND. 2010.
13. **Picklo MJ**. "The Healthy Colors of Your Diet." Grand Forks Herald, Grand Forks, ND. April, 2011.
14. **Picklo MJ**. "OMG-Omega 3s! ." Grand Forks Herald, Grand Forks, ND. May, 2012.
15. **Picklo MJ**, Claycombe KJ, Meydani M. Adipose Dysfunction, Interaction of Reactive Oxygen Species, and Inflammation. Advances in Nutrition. 2012 Sep 1;3(5):734-5.
16. **Picklo MJ**. "Farmed Fish: A Source of Lipid Soluble Nutrients" in Fish and Fish Oils in Health and Disease. Raatz and Bibus eds. Elsevier. In press.

Abstracts

1. **MJ Picklo**, SJ Olson, JD Hayes, WR Markesbery, and TJ Montine. "Elevation of AKR7A2 in neurodegenerative disease." Society for Neuroscience Meetings, San Diego, CA. November, 2001
2. SM Belgarde and **MJ Picklo**. "The induction and localization of AKR7A proteins." Graduate Research Day, University of North Dakota, March, 2002.
3. A Kubatova, M Fernandez, JR Gallagher, **MJ Picklo**, SB Hawthorne. " A new approach to characterizing organic aerosol (wood smoke and diesel exhaust particulate) using subcritical water fractionation." U.S. Department of Energy/ National Energy Technology Laboratory Conference, Pittsburgh, PA. April 2002.
4. **MJ Picklo** and TC Murphy. " Characterization of CNS aldehyde dehydrogenases that utilize 4-hydroxynonenal." Tenth International Symposium on the Enzymology and Molecular Biology of Carbonyl Metabolism, Ystad, Sweden. July, 2002
5. A Kubátová, MM Fernandez, **MJ Picklo**, JR Gallagher, SB Hawthorne. "Initial Results on use of subcritical water for extraction of organic aerosol from wood smoke and diesel exhaust particulate and application of toxicity tests. Proceedings of the International Conference on Air Quality III. Arlington, VA. September, 2002.
6. SM Belgarde and **MJ Picklo**. "Sulforophane enhances the activities of NAD(P)H: Quinone reductase and glutathione S transferases in C6 glioma cells." Society for Neuroscience Meetings, Orlando, FL. November, 2002.
7. **MJ Picklo**, KM Gibson, TC Murphy. "Oxidation of 4-Hydroxy-2-nonenal by Succinic Semialdehyde Dehydrogenase (ALDH5A)". Society of Toxicology Meetings, Salt Lake City, UT. March, 2003.
8. **MJ Picklo**, M Meyer, TJ Montine, JE Porter, and TC Murphy. "4-Hydroxy-2-nonenic acid, a metabolite of 4-hydroxynonenal, is a GHB receptor ligand." Society for Neuroscience Society Meetings, New Orleans, LA, November 2003.
9. MM Miller and **MJ Picklo**. "Labeling of carbonyl containing proteins with N-(aminooxyacetyl)-N'-(D-biotinyl) hydrazine. Society for Free Radical Biology and Medicine. Seattle, WA, November 2003.

10. **Picklo MJ**, Poppe C, Porter J, Montine TJ, and Murphy TC. "Formation and receptor binding by 4-hydroxy-*trans*-2-nonenal in human brain." Society for Free Radical Biology and Medicine. Seattle, WA, November 2003.
11. Meyer MJ, Miyagi M, and **Picklo MJ**. "Quantitation of 4-hydroxy-*trans*-2-nonenal and its metabolites by liquid chromatography-mass spectrometry." Society of Toxicology, Baltimore, MD, March 2004.
12. Kubatova A, Dronen L, Hawthorne SB, **Picklo MJ**. "Oxidative Stress of Polar and Nonpolar Air Particulate Matter Components". Society of Toxicology, Baltimore, MD, March 2004.
13. Kubatova A, Dronen L, Hawthorne SB, **Picklo MJ**. "Hot Pressurized Water - a Tool for Fractionation of Particulate Matter for Toxicological Studies." SETAC Europe 14th Annual Meeting in Prague, Czech Republic, April 2004.
14. Kubatova A, Dronen L, Gallagher, JR, **Picklo MJ**, Hawthorne SB. "Toxicity of Wide-Polarity Range Fractions Extracted with Hot Pressurized Water." SETAC Europe 14th Annual Meeting in Prague, Czech Republic, April 2004.
15. **Picklo MJ**, Poppe C, Montine TJ, Murphy T. 4-Hydroxy-2-nonenal is Oxidized by Multiple Aldehyde Dehydrogenases in the Human Brain. 12th International Symposium on the Enzymology and Molecular Biology of Carbonyl Metabolism, Burlington, VT. July, 2004.
16. **Picklo MJ**, Murphy TC, Arntzen RA, Meyer MJ. Nitrate-based Vasodilators Inhibit the Aortic Aldehyde Dehydrogenases ALDH2 and ALDH3. American Heart Association Scientific Meetings, New Orleans, LA. November, 2004.
17. Struys ES, Verhoeven NM, Jansen EEW, ten Brink HJ, Burlingame TG, Gupta M, Quang LS, Maher T, Goodwin AK, Weerts EM, **Picklo MJ**, Jakobs C, KM Gibson KM. Gamma-hydroxybutyrate (GHB) Metabolism to D-2-hydroxyglutarate (D-2-HG) and 4,5-Dihydroxyhexanoate (DHHA): Further Pathomechanisms in Succinate Semialdehyde Dehydrogenase (SSADH) Deficiency. Society for the Study of Inborn Errors of Metabolism, Amsterdam, Netherlands. August, 2004.18. Honzatko A, Brichac J, Smoliakova I, and **Picklo MJ**. Indirect chiral separation of 4-hydroxy-2-nonenal. Society for Free Radical Biology and Medicine Annual Meeting, St. Thomas, US Virgin Islands. November, 2004.
19. Honzatko A, Brichac J, Murphy TC, Mosely DM, and **Picklo MJ**. Stereoselective detoxification of *trans*-4-hydroxy-2-nonenal by rat brain mitochondria. American Society for Neurochemistry, Madison, WI, June 2005
20. Brichac J, Honzatko A, and **Picklo MJ**. Different enantioselectivity of 4-hydroxy-*trans*-2-nonenal oxidation in rat brain and liver mitochondria. American Society for Neurochemistry, Madison, WI, June 2005
21. Kubatova A, Murphy TC, Combs C, and **Picklo MJ**. Metabolism of *trans*-4-hydroxy-2-nonenal (HNE) by murine astrocytes. Oxidants and Antioxidants in Biology sponsored by the Oxygen Club of California/ University of Turin. Alba, Italy. September 2005.
22. Kubatova A, Murphy TC, and **Picklo MJ**. Astrocytic detoxification of HNE: Roles of ALDH and GSH. Society for Free Radical Biology and Medicine. Austin, TX. November 2005.
23. Honzatko A, Brichac J, and **Picklo MJ**. LC-ESI-MS/MS analysis of *trans*-4-hydroxy-2-nonenal enantiomers and metabolites. American Society for Mass Spectrometry. Seattle, WA. May 2006.
24. Brichač J, Honzatko A, Long E, and **Picklo MJ**. Analysis of HNE and its Metabolites: Chiral and LC-ESI-MS/MS Applications. HNE Club. Genoa, Italy. June 2006. Selected for oral presentation.
25. **Picklo MJ**, Plamerio F, Blasi P, Murphy T, Novelletto A, Malaspina P. Class 5 mitochondrial aldehyde dehydrogenase (ALDH5A) confers cytoprotection against 4-

- hydroxynonenal (HNE) and hydrogen peroxide. Society for Free Radical Biology and Medicine. Denver, CO. November 2006. Selected for oral presentation.
26. Whitsett J, Picklo M, Herrnreiter A, Vasquez-Vivar J. 4-HYDROXY-2-NONENAL INCREASES ROS FORMATION IN ENDOTHELIAL CELLS BY SUPPORTING eNOS UNCOUPLING. Society for Free Radical Biology and Medicine. Denver, CO. November 2006.
 27. Honzatko A, Brichac J, and **Picklo MJ**. Preparation and stability of trans-4-hydroperoxy-2-nonenal. Society for Free Radical Biology and Medicine. Denver, CO. November 2006.
 28. Brichac J, Honzatko A, and **Picklo MJ**. Analysis of *trans*-4-hydroxy-2-nonenic acid enantiomers by direct and indirect HPLC methods. Society for Free Radical Biology and Medicine. Denver, CO. November 2006.
 29. Long EK and **Picklo MJ**. Analysis of Structural Differences Between 4-Hydroxy-2-Alkenals and 2-Alkenals Using Electron Impact and Positive-Ion Chemical Ionization Mass Spectrometry Following Derivatization With O-(2,3,4,5,6-Pentafluorobenzyl)-Hydroxylamine. American Oil Chemists Society, Quebec, Canada, May 2007.
 30. Swenby NP, Gonnella TP, **Picklo MJ**. Mutation of the conserved R166 residue in class 5A aldehyde dehydrogenase (ALDH5A), an enzyme critical for GABA metabolism, affects substrate specificity and cofactor binding. XXVII Midwest Enzyme Chemistry Conference. Chicago, IL, September 2007.
 31. Long EK, Murphy TC, Leiphon LJ, Watt J, Morrow JD, Milne GL, Howard JRH, **Picklo MJ**. *Trans*-4-Hydroxy-2-hexenal is a neurotoxic product of docosahexaenoic (22:6; *n*-3) acid oxidation. Society for Free Radical Biology and Medicine. Washington DC, November 2007.
 32. **Picklo MJ** and Murphy TC. Mitotoxicity of 4-Hydro(Peroxy)Nonenal Pathway Products: 4-Oxo-2-Nonenal is a Potent Mitochondrial Toxin. Society for Free Radical Biology and Medicine. Washington DC, November 2007.
 33. Long EK, Rosenberger TA, **Picklo MJ**. Ethanol withdrawal increases glutathione adducts of trans-4-hydroxy-2-hexenal but not trans-4-hydroxy-2-nonenal in cerebral cortex. Society for Free Radical Biology and Medicine. San Francisco CA, November 2009.
 34. **Picklo MJ** and Idso JP. Obesity induces tissue-specific changes in lipid peroxidation defense enzymes. American Society for Nutrition /Exp Biology. Anaheim CA. April 2010.
 35. and Uthus EO. Methionine sulfoxide disposition is altered in animal models of obesity. Society for Free Radical Biology and Medicine. Orlando, FL. November 2010.
 36. Raatz S, Orr LR, Kurzer MS, **Picklo MJ**. A low fat diet enhances polyunsaturated fatty acid desaturation and elongation independent of n3 enrichment. American Society for Nutrition /Exp Biology. Washington D.C. April 2011.
 37. Vomhof-DeKrey E. and **Picklo MJ**. Lack of Nrf2 reduces voluntary exercise in mice: influences of sex and diet. Society for Free Radical Biology and Medicine. Atlanta, GA. November 2011.
 38. Vomhof-DeKrey E. and **Picklo MJ**. Nrf2 pathway proteins are differentially expressed during 3T3-L1 adipocyte differentiation. Society for Free Radical Biology and Medicine. Atlanta, GA. November 2011.
 39. **Picklo MJ**, Jackson MI, Idso JP. Glutathionylation of Hepatic and Visceral Adipose Proteins Decreases in Obese-Prone, Glucose Intolerant Rats. Society for Free Radical Biology and Medicine. Atlanta, GA. November 2011.
 40. **Picklo MJ**, Idso JP, Jackson MI, N-methyl-2-vinylpyridinium ion as a thiol alkylator for thiol proteomics. Society for Free Radical Biology and Medicine. Atlanta, GA. November 2011.

41. **Picklo M**, Rosenberger T, Burr G, Wolter W, Raatz S. Twice-weekly consumption of farmed Atlantic salmon increases plasma content of phospholipid *n*-3 fatty acids. American Society for Nutrition/Experimental Biology, San Diego, CA 2012.
42. **Picklo M**, Raatz S, Cleveland B, Rexroad C III. Evaluation of long-chain *n*3 fatty acid content in diploid and triploid rainbow trout. American Society for Nutrition/Experimental Biology, Boston, MA 2013.
43. **Picklo M**. Vitamin E and Vitamin C supplementation does not prevent glucose intolerance in obese-prone rats. American Society for Nutrition/Experimental Biology, Boston, MA 2013.
44. Bukowski M and **Picklo MJ**. Rapid, high-throughput oil analysis by infusion mass spectrometry. National Sunflower Association Research Forum, Fargo, ND 2014.
45. Raatz S, Beals K, Johnson L, **Picklo M**. Honey, sugar and high fructose corn syrup exert equivalent effects on glucose and insulin. American Society for Nutrition/Experimental Biology, San Diego, CA 2014.
46. Picklo MJ and Thyfault JP. Supplementation with Vitamin E and Vitamin C inversely alters mitochondrial copy number and mitochondrial protein in obese, exercising rats. American Society for Nutrition/Experimental Biology, San Diego, CA 2014.
47. Bukowski M and **Picklo MJ**. Measuring protein bound glutathione (PSSG): Critical correction for cytosolic glutathione species. American Society for Mass Spectrometry. Baltimore, MD 2014.
48. Cao JJ and **Picklo MJ**. Differential effects of involuntary wheel running on bone structure of high-fat diet-induced obese rats. American Society for Bone and Mineral Research. Houston TX 2014.
49. **Picklo MJ**, Rousova J, Kubatova A, Al-Naqeb G. Pulicaria jaubertii Extract Prevents Triglyceride Deposition in 3T3-L1 Adipocytes. American Society for Nutrition/Experimental Biology, Boston, MA 2015.
50. **Picklo MJ** and Newman JW. Hepatic Oxylin Profiles in Obese Rats: Effect of Antioxidant Supplementation. American Society for Nutrition/Experimental Biology, Boston, MA 2015.
51. Raatz S, Beals K, Johnson L, **Picklo M**. Glycemic effect of Nutritive sweeteners: Honey, Sugar and High Fructose Corn Syrup. Experimental Biology 2015, Boston, MA
52. Jahns L, Raatz S, Johnson L, Kranz S, Silverstein JT, **Picklo M**. Seafood intake by US adults. Experimental Biology 2015, Boston, MA.

D. Teaching and Mentoring

Director, Graduate Programs, Department of Pharmacology, Physiology, and Therapeutics. August 2004-March 2009

Director, Research And Integrative Laboratory (RAIL) Program 2004. A program designed to transition North Dakota undergraduates to postgraduate careers in biomedical research in North Dakota.

Mentoring

Fulbright Scholars

Ghanya Al-Naqeb, Sana'a University 2014

Research Fellows

Melissa Meyer, Ph.D.
Alena Kubatova, Ph.D.
Aleš Honzátka, Ph.D.
Emilie Vomhof-DeKrey, Ph.D.
Petr Žáček, Ph.D.
Aaron Mehus, Ph.D.

Graduate Students

Past

Eric K. Long (Ph.D. student, Pharmacology, Physiology, and Therapeutics), laboratory of Dr. Picklo. Graduated 2009.

Jiří Brichač (Ph.D. student, Dept of Analytical Chemistry) Charles University, Prague, Czech Republic, laboratory of Dr. Jiří Zima, co-advisor Dr. Picklo, Graduated 2009

Promise Yong (Ph.D. student, Chemistry), laboratory of Dr. Anamitrou Bannerjee, Graduated 2008

Ladislav Sallai (Ph.D. student, Chemistry), laboratory of Dr. Irina Smoliakova, Graduated 2008

Kristin Hillman (Ph.D. student, Pharmacology, Physiology, and Therapeutics), laboratory of Dr. James Porter. Graduated 2007

Andrew Woster (Ph.D. student, Pharmacology and Toxicology), laboratory of Dr. Colin Combs. Graduated 8-2007

Gina Norsiden (M.S. student, Pharmacology, Physiology, and Therapeutics), laboratory of Dr. James Porter. Graduated 7-2006

Patrick Stevens (M.S. student, Pharmacology, Physiology, and Therapeutics), laboratory of Dr. Jonathan Geiger. Graduated 6-2006.

Melissa Meyer (Ph.D. student, Chemistry), laboratory of Dr. Anthony Borgerding. Member-at-large. Graduated 6-2003.

Undergraduate Student Mentoring

Chadwick Larson, Valley City State University, 2004, obtained an NDEPSCoR AURA award to perform summer research regarding pulmonary aldehyde dehydrogenases.

Mark Miller, UND, Dept of Chemistry; Recipient of \$500 travel award from Molecular Probes for presentation of research at Society for Free Radical Biology and Medicine Meeting, Nov. 2003

Nathan Swenby, UND, Biology; was a Postbaccalaureate fellow at the National Institute on Alcohol Abuse and Alcoholism (NIAAA)

Ethan Nguyen, North Dakota State University- one first author publication

Claire Poppe, Gustavus Adolphus College, currently a graduate student in Medicinal Chemistry at the University of Wisconsin

Leah Brekke, UND, Biology

Roberta Arntzen, UND, Interdisciplinary Studies, 2004, second author publication

Patrick J Nelson, Interdisciplinary Studies; senior thesis, 2006-present, received an NIH summer fellowship for summer 2007.