**Matthew J. Picklo, Sr., Ph.D.**
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## A. Vitae

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

**Experience:**

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| 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 |

**Education**

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| 1986-1990 | B.A., University of Delaware, Biological Sciences, cum laude |
| 1990-1995 | Ph.D., Vanderbilt University, Pharmacology<br>Mentor: David Robertson, M.D. |
| 1995-1996 | Research Fellow, University College London, Department of Anatomy;<br>Mentors: Geoffrey Burnstock, D.Sci. and David Latchman, D.Sci. |
| 1996-2001 | Research Fellow, Vanderbilt University, Department of Pathology<br>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 |

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

**Honors and Awards**

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| 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**

Society for Free Radical Biology and Medicine (formerly the Oxygen Society)
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

**Invited Seminars**

"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. Mechanistic and clinical studies are used to identify how modifications in oxidative stress and dietary lipid intake can be used to prevent these major health issues.

**Grant Support:**

**Current**

Glycemic effect of honey. Role: Co-PI. PI: Susan Raatz. USDA/ARS Grand Forks Human Nutrition Research Center. $66,000. 5% effort
2011-2013

Food Factors and Maintenance of Body Weight and Health
USDA/Agricultural Research Service
Role: Lead Scientist/PI. Appropriated funds. 95% effort
2010-2014

**Pending**

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

**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.

**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-nonenoic 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-nonenoic 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 $Mg^{2+}$-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. Vomhof-DeKrey E. and **Picklo MJ**. The Nrf2-Antioxidant Response Element Pathway- A Target for Regulating Energy Metabolism. Journal of Nutritional Biochemistry. 2012 Oct;23(10):1201-6.
46. 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.
47. 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.
48. **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.
49. **Picklo M.** Antioxidant supplementation does not prevent insulin resistance, oxidative damage, or adipose inflammation in obese rats. Submitted.
50. Cao JJ and **Picklo MJ**. N-acetylcysteine supplementation decreases osteoclast differentiation and improves bone microstructure in mice fed a high-fat diet. 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.

**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. **Picklo MJ**. Methods of sympathetic degeneration and alteration. The Journal of the Autonomic Nervous System 1997 (62) 111-125.
4. 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.
5. 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.
6. 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.
7. **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.
8. 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.
9. 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.
10. **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.
11. 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.

12. **Picklo MJ.** "So you were volunteered to be a graduate director…" Young Chemists Committee Newsletter, American Chemical Society, 2009.
13. **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.
14. **Picklo MJ**. "The Healthy Colors of Your Diet." Grand Forks Herald, Grand Forks, ND. April, 2011.
15. **Picklo MJ**. "OMG-Omega 3s! ." Grand Forks Herald, Grand Forks, ND. May, 2012.
16. **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.

**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-nonenoic 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-nonenoate 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-nonenoic 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 n3 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.

## 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

### Research Fellows

Melissa Meyer, Ph.D.
Alena Kubatova, Ph.D.
Aleš Honzatko, Ph.D.
Emilie Vomhof-DeKrey, Ph.D.

### Graduate Students

*Past*

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

Jiři Brichač (Ph.D. student, Dept of Analytical Chemistry) Charles University, Prague, Czech Republic, laboratory of Dr.Jiři 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.

## Lecturing

**Course Instructor and Lecturer, PPT 521 Seminar in Physiology and Pharmacology**. Fall 2004-6. Three hours contact time. I updated and streamlined previous course (see below) to develop the critical thinking skills, intellectual confidence, and presentation skills in students. The evaluations from student (found later in this section) indicate that this course is fulfilling the intended goals. Three hours contact time and 1 hour preparation.

**Co-instructor, PPT 521, Seminar in Physiology and Pharmacology**. Fall 2001-2003. 20 hours contact time. In this course, students were instructed and evaluated in the preparation and presentation of research seminars.

**Lecturer PPT500, Graduate Physiology and Pharmacology.** Fall 2004 and Spring 2005-6. Cardiovascular physiology and pharmacology (10 hours). Anxiolytics (two hours, Spring 2005 and 2006). Preparation time of two hours/hour when lectures were already presented. Approximately five hours per lecture when lectures were new material.

**Lecturer, PPT 501, Graduate Medical Pharmacology.** Fall 2002 and 2003. Six hours lecture time and 30 hours of preparation time as these were completely new lectures. Topics: pharmacokinetics, biotransformation, serotonergic drug, poisoning, and toxicology.

**Lecturer, PPT 523, Graduate Medical Physiology.** Spring 2003. Cardiovascular physiology. 18 hours lecture time. During this offering of PPT523, these were completely new lectures and required about five hours of preparation time per hour of lecture.

**Lecturer, PPT 530, Advanced Neurochemistry.** Spring 2003 and Spring 2005. 6 hours lecture time and preparation time of five hours/ hour of new lecture and two hours/hour of already presented lectures. Topics: synaptic transmission, neurotransmitter synthesis, release, and receptors.

**Lecturer, PPT 535, Mechanisms of Neurodegenerative Disorders.** Fall 2003. Two hours contact time, approximately four hours of preparation time. Topic: mitochondria and cell death.

**Guest Lecturer, Chem 333, Introductory Environmental, Clinical, Biomedical, and Forensic Chemical Analysis.** Fall 2003-2005. One hour of contact time with five hours/ hour of new lecture and two hours/hour of already presented lectures.

**Course Director, PPT 505, Research Techniques.** Fall 2003/Spring 2004/Fall 2005. A course with the objective of introducing students to the wide variety of techniques utilized for separation and quantitation of biological molecules. Topics incuded UV-Vis Spectroscopy, HPLC, and Protein Purification. For Spring 2004 and Fall 2005, this course was offered for 3 credits with a laboratory. Six hours of lecture time and nine hours of laboratory time. One hour of contact time with five hours/ hour of new lecture and one hour/hour of already presented lectures.

**Lecturer, PPT 511 Biochemical and Molecular Mechanisms in Pharmacology**, Three hours contact time. Fall 2005. Subject: Nuclear receptor signaling. Three hours of preparation time.

**Lecturer PPT540**, **Molecular Neuropharmacology**, Three hours Fall 2006. Subject: Oxidative stress and signaling.

**Block III Biochemical and Clinical Aspects of Drug Clearance.** Medical student lectures Jan 2005, 2006, 2007.

**Facilitator**

**Block IV.** Spring semester 2002 and 2003. **Block III.** Spring 2004, Spring 2007-9. **Block VIII**. Spring 2005,6. Guided UND medical students through medical case problems. 100 hrs each Block.

Block IV design team Spring 2006.

**Service**

**Professional**

Associate Editor, Lipids May, 2006 to present
Associate Editor, Journal of Alzheimer's Disease, 2007-2008
American Chemical Society, Red River Valley Chapter, Elected Member-at-Large 2008-2009; 2009 Chair-elect, 2010 Chair 2011-2012

**Grant reviewer**

2007 Foundation for Polish Science
2006-7 Civilian Defense Research Fund: Russian and Georgian Collaborations
2011 Indo-US Technology Endowment

**Manuscript reviewer**
*ACTA Pharmacologica Sinica; American Journal of Pathology; Brain Research; Experimental Neurology; FEBS Letters, Free Radical Biology and Medicine; Free Radical Research Journal of Chemical Neuroanatomy; Neurotoxicology; Journal of Alzheimer's Disease Journal of Clinical Investigation; Journal of Inherited Metabolic Diseases; Journal of Neurochemistry; Journal of Pharmacology and Experimental Therapeutics; Lipids; Life Sciences ; Molecular Genetics and Metabolism; Neurochemistry International; Toxicological Sciences*

Abstract reviewer for the Society of Free Radical and Biology Meetings, November 2003, 2004, 2005, 2006, 2007
Young Investigator Award Judge for the Society of Free Radical and Biology Meetings, November 2003, 2004, 2005, 2006,2007.

External manuscript reviewer for USDA Nutrition Research Center, Grand Forks, ND.

**Faculty Service/Committee Membership**

*University*
2001-2003 Faculty Seed Money Biological Science Subcommittee Grant Reviewer
2003 Alice Clark Mentoring Program Review Panel
2003-2006 University Senate at-large senator
2006-2007 University Senate School of Medicine Representative
2007-2009 Senate Legislative Affairs Committee
2007-2010 Elected Member, University of North Dakota Graduate Committee, SMHS representative
2008-2009 Vice-chair, University of North Dakota Graduate Committee

*Departmental*
2001-2002 Graduate Student Recruitment
2001-2004 Seminar Series coordinator
2002 Departmental Cardiovascular Faculty Search
2003-2004 coordinate monthly "Research Vignettes" program

**Community Service**

Spring 2002 and 2003 Mentor for East Grand Forks High School students that had a day to experience a laboratory setting.
Spring 2002 - 2005 North Dakota Science Fair Judge.

**Professional Development**

**Autumn 2001** Participated in the Alice Clark Mentoring Program

**Autumn 2003** Participated in the Faculty Study Seminar sponsored by the Office of Instructional Development. This series analyzed the book entitled "Teaching with Your Mouth Shut" that focused upon teaching styles utilizing example and hands on vs. lecture-based methods.

**June 2004** Participated in the Faculty Study Seminar sponsored by the Office of Instructional Development. This series discussed methods to stimulate critical thinking in students using the book entitled" Engaging Ideas" by John C. Bean. Material and discussion from this series was used as a basis for developing the curriculum for the revised offering of PPT 521.

**February 2006** Participated in the *On Teaching* Lunch Discussion “Directing Independent Studies” sponsored by the Office of Instructional Development.