



Thomas Clifford Faculty Research - University of North Dakota 2009  
Achievement Award

## **RESEARCH DIRECTIONS**

1. Role of fatty acid binding proteins on heart and brain lipid metabolism
2. Impact of  $\alpha$ -synuclein on brain lipid metabolism
3. Brain lipid metabolism including ether lipids in neurodegenerative disease
4. Impact of n-3 fatty acids on human health and disease

## **SERVICE**

### ***Society Memberships:***

American Society for Neurochemistry, 1986 to present  
International Society for Neurochemistry, 1989 to present  
American Oil Chemists' Society, 1992 to present  
International Society for Study of Fatty Acids and Lipids, 2001 to present  
American Heart Association, 2001 to 2008  
United Leukodystrophy Foundation, 2002 to present  
American Society for Biochemistry and Molecular Biology, 2008 to present

### ***Ad Hoc Reviewer for:***

Aging Research Reviews  
Alcohol and Alcoholism  
American Journal of Drug and Alcohol Abuse  
American Journal of Physiology  
Analytical Biochemistry  
Animal  
Antioxidant and Redox Signaling  
Archives Biochemistry and Biophysics  
ASNeuro  
Biochemistry  
Biochemistry and Cell Biology  
Biochemical Pharmacology  
Biochimica Biophysica Acta  
Biochemical Journal  
Biophysical Journal  
BioMed Research International  
Breast Cancer Research  
British Journal of Nutrition  
Canadian Journal of Physiology and Pharmacology  
Cardiovascular Toxicology  
Cellular Signaling  
Comparative Biochemistry and Physiology  
Critical Reviews in Food Science and Nutrition  
Current Pharmaceutical Design  
European Journal of Lipid Science and Technology  
Experimental Gerontology  
FEBS Letters  
Glia  
Handbook of Neurochemistry and Molecular Biology  
Hepatology

Insect Molecular Biology  
International Journal of Molecular Sciences  
Journal of Aging Research  
Journal of Alternative and Complementary Medicine  
Journal of the American Oil Chemist Society  
Journal of Biological Chemistry  
Journal of Cellular Biochemistry  
Journal of Lipid Research  
Journal of Medicinal Food  
Journal of Molecular Graphics and Modeling  
Journal of Neurochemistry  
Journal of Neurodegeneration and Regeneration  
Journal of Neuroimmune Pharmacology  
Journal of Neuroinflammation  
Journal of Neuroscience Research  
Journal of Neurotrauma  
Journal of Nutrition  
Journal of Nutrition and Metabolism  
Journal of Science and Engineering Ethics  
Laboratory Investigation  
Life Sciences  
Lipids  
Molecular and Cellular Biochemistry  
Molecular and Chemical Neuropathology  
Molecular and Genetic Medicine  
Molecular Neurodegeneration  
Molecular Nutrition and Food Research  
Neurochemistry International  
Neurochemical Research  
Neuroscience Letters  
New Biotechnology  
Pharmacological Reports  
PLOS ONE  
Prostaglandins, Leukotrienes & Essential Fatty Acids  
Protein Purification and Expression  
Rapid Communications in Mass Spectrometry

***Editorships:***

<i>Editor-in-Chief</i>	Lipids 2006-present
<i>Associate Editor</i>	Lipids 2001-2006
<i>Associate Editor</i>	International Society for Study of Fatty Acids and Lipids (ISSFAL) 2001-2010
<i>Handling Editor</i>	Journal of Neurochemistry 2004-present
<i>Editorial Board</i>	Metabolic Brain Disease 2010-present
<i>Editorial Board</i>	Frontiers in Membrane Physiology and Biophysics 2013-present

***National service:***

American Society for Neurochemistry, Council Member (2005-2009), (2013-present); Folch-Pi Award Committee, 2004-present (Chair 2008-present)

American Oil Chemists Society, Chang Award Committee, 2004-2007 (Chair in 2007); Publication Steering Committee, 2006-2012; Professional Educators Common Interest Group, 2012-present

**Grant review and panel service:**

Myelin Project 2001-2006  
 Center for Environmental and Rural Health, Texas A & M Univ. 2003-2004  
 Alzheimer's Association 2003-2005, 2008  
 National Science Foundation 2005  
 U.S. Army Neurotoxin Exposure and Treatment Research Program 2006  
 NIH CMND ad hoc reviewer 2007  
 Science Foundation of Ireland 2007  
 National Cattlemen's Beef Association, 2007  
 Scottish Rite Charitable Foundation, 2007  
 Israel Science Foundation, 2008  
 ELA Research Foundation, 2008, 2009  
 ERA for Guelph University, Guelph, ON 2008  
 NIH NIGMS ad hoc reviewer 2009  
 Wellcome Trust 2009  
 Michigan Diabetes Research and Training Center Pilot Grant 2011  
 ZRG1 MDCN-T(5) special emphasis panel member NIH Basic Biology of Neurological Disorders. 2012, 2013  
 SEEDS grants, OARDC and The Ohio State University 2012  
 Mitacs Fellowships 2013  
 FAPESP-FCT 2014 (Portugal)

**FUNDING**

**Current Funding:**

Intramural Seed Grant	Total costs: \$35,900	03/01/14-06/30/15
	Mutant alpha-synuclein and brain arachidonic acid metabolism	

**Completed Funding:**

National Institutes of Health R01 DK078775-01	Total costs: \$69,660 (subcontract to EJM) (year to year renewable subcontract) Inborn errors of long chain fat metabolism P.I. Gerald Vockley, Children's Hospital of Pittsburgh of University of Pittsburgh Medical Center	04/01/08-03/31/11
National Institutes of Health R21 NS060141-01	Total costs: \$324,843 Alpha-synuclein regulates microglial activation through lipid mediators	06/01/08-05/31/10
ND EPSCoR AURA	Total costs: \$7,500 Role of alpha-synuclein in astrocyte cholesterol metabolism	05/16/09-12/04/09
COBRE Pilot Project	Total costs: \$30,000 Role of $\alpha$ -synuclein in brain lipid metabolism	09/01/07-5/31/08
National Institutes of Health COBRE 1P20 RR17699-01	Total costs: \$1,059,436 (for project) Role of $\alpha$ -synuclein in brain lipid metabolism (No overlap with 1R21- NS043697-01A) (\$10.26 M total costs for COBRE grant)	09/13/02-07/31/07
Canadian Flax Council	Total costs: \$20,000 (CDN) Phase I dosing trial for flax oil in Winnipeg firefighters Co-P.I. James Friel, University of Manitoba, Winnipeg, MB (\$75,000 CDN total project costs)	06/01/05-05/31/06

National Institutes of Health 1R21 NS043697-01A	Total costs: \$335,588 Brain lipid metabolism in $\alpha$ -synuclein gene-abated mice No cost extension until 6-30-05	06/01/02-06/30/04
March of Dimes	Total costs: \$16,000 Glycerol kinase in lipid and energy metabolism Co-P.I. William J. Craigen, Baylor School of Medicine, Houston, TX, (\$242,177 total project costs)	07/01/02-06/30/05
Myelin Project	Total costs: \$60,000 Erucic acid uptake and metabolism in brains of awake adult rats	11/01/00-10/31/01
UNDSMHS Research Committee	Total costs: \$7,500 Brain lipid metabolism in $\alpha$ -synuclein gene-abated mice	03/01/01-11/30/01
ND EPSCoR	Total costs: \$21,300 Microsurgery and brain metabolism core	04/22/02-04/30/02
American Heart Society 0151121Z	Total costs: \$100,000 Fatty acid uptake and metabolism in awake adult rats: Effect of heart rate and fatty acid family	07/01/01-06/30/03
ND EPSCoR	Total costs: \$2,500 Electrophoresis equipment grant	09/15/03-04/15/04
<b><i>Pending Funding:</i></b>		
National Institutes of Health 1R01 AG053570-01	Total costs: \$1,737,500 Role of FABP3 in brain arachidonic acid metabolism and neuroinflammation in AD	07/01/16-06/30/21
American Heart Assoc. 16GRNT31380025	Total costs: \$154,000 Role of fatty acid binding protein-3 in heart fatty acid uptake and metabolism	07/01/16-06/30/18

## **PATENTS**

U.S. 8,148,602      Diacylglycerol acyltransferases from flax  
University of Alberta and Agragen, LLC Co-owners  
Weselake; Randall (Edmonton, CA), Siloto; Rodrigo (Edmonton, CA), Liu;  
Qin (Edmonton, CA), Laroche; Andre (Lethbridge, CA), Murphy; Eric  
(Grand Forks, ND), Koivu; Kimmo (Itasalmi, FI)

## **PUBLICATIONS**

**CURRENT H-factor 34 for all refereed publications, 31 without self-citations**

### **REFEREED PUBLICATIONS**

1. Jurkowitz-Alexander, M., Ebata, H., Mills, J.S., Murphy, E.J. and Horrocks, L.A. (1989) Solubilization, purification, and characterization of lysoplasmalogen alkenylhydrolase (lysoplasmalogenase) from rat liver microsomes *Biochim. Biophys. Acta* **1002:203-232**.
2. Hirashima, Y., Farooqui, A.A., Murphy, E.J. and Horrocks, L.A. (1990) Purification of

- plasmalogens using *Rhizopus delemar* lipase and *Naja naja* phospholipase A<sub>2</sub> *Lipids* **25:344-348**.
3. Murphy, E.J., Joseph, L.B., Stephens, R. and Horrocks, L.A. (1992) Phospholipid composition of cultured human endothelial cells *Lipids* **27:150-153**.
  4. Haun, S.E., Murphy, E.J., Bates, C.M. and Horrocks, L.A. (1992) Extracellular calcium is a mediator of astroglial injury during combined glucose-oxygen deprivation *Brain Res.* **593:45-50**.
  5. Murphy, E.J. and Horrocks, L.A. (1993) Composition of the phospholipids and their fatty acids in the ROC-1 oligodendroglial cell line *Lipids* **28:67-71**.
  6. Murphy, E.J., Anderson, D.K. and Horrocks, L.A. (1993) Phospholipid and phospholipid fatty acid composition of mixed murine spinal cord neuronal cultures *J. Neurosci. Res.* **34:472-477**.
  7. Murphy, E.J., Slivka, A.P., Rosenberger, T.A. and Horrocks, L.A. (1993) High-performance liquid chromatography separation and quantitation of methylprednisolone from rat brain *Anal. Biochem.* **209:339-342**.
  8. Murphy, E.J. and Horrocks, L.A. (1993) Effects of differentiation on the phospholipid and phospholipid fatty acid compositions of N1E-115 neuroblastoma cells *Biochim. Biophys. Acta* **1167:131-136**.
  9. Murphy, E.J. and Horrocks, L.A. (1993) Mechanisms of hypoxic and ischemic injury: use of cell culture models *Mol. Chem. Neuropath.* **19:95-106**.
  10. Murphy, E.J., Jurkowitz, M.S., Stephens, R. and Horrocks, L.A. (1993) Acidic hydrolysis of plasmalogens followed by high-performance liquid chromatography *Lipids* **28:565-568**.
  11. Murphy, E.J., Roberts, E. and Horrocks, L.A. (1993) Aluminum silicate toxicity in cell cultures *Neuroscience* **55:597-605**.
  12. Murphy, E.J., Roberts, E., Anderson, D.K. and Horrocks, L.A. (1993) Cytotoxicity of aluminum silicates in primary neuronal cultures *Neuroscience* **57:483-490**.
  13. Murphy, E.J. and Horrocks, L.A. (1994) A model of compression trauma: pressure induced injury in cell cultures *J. Neurotrauma* **10:431-444**.
  14. Murphy, E.J., Behrmann, D.L., Bates, C.M. and Horrocks, L.A. (1994) Lipid alterations following impact spinal cord trauma in the rat *Mol. Chem. Neuropath.* **23:13-26**.
  15. Murphy, E.J., Haun, S.E., Rosenberger, T.A. and Horrocks, L.A. (1995) Altered lipid metabolism in the presence and absence of extracellular Ca<sup>2+</sup> during combined oxygen-glucose deprivation in primary astrocyte cell cultures *J. Neurosci. Res.* **42:109-116**.
  16. Prows, D.R., Murphy, E.J., and Schroeder, F. (1995) Intestinal and liver fatty acid binding proteins differentially affect fatty acid uptake and esterification in L-cell fibroblasts *Lipids* **30:907-910**.
  17. Slivka, A.P., Murphy, E.J. and Horrocks, L.A. (1995) Cerebral edema after temporary

- and permanent middle cerebral artery occlusion in the rat *Stroke* **26:1061-1065.**
18. Murphy, E.J., Prows, D., Jefferson, J.R. and Schroeder, F. (1996) Liver fatty acid binding protein expression in transfected fibroblasts stimulates fatty acid uptake and metabolism *Biochim. Biophys. Acta.* **1301:191-196.**
  19. Heyliger, C.E., Khesghi, T.J., Murphy, E. J., Myers-Payne, S.C. and Schroeder, F. (1996) Fatty acid double bond orientation alters interaction with L-cell fibroblast *Mol. Cell. Biochem.* **155:113-119.**
  20. Moncecchi, D., Murphy, E.J., Prows, D.R., and Schroeder, F. (1996) Sterol carrier protein-2 expression in mouse L-cell fibroblasts alters cholesterol uptake *Biochim. Biophys. Acta.* **1302:110-116.**
  21. Murphy, E.J., Rosenberger, T.A. and Horrocks, L.A. (1996) Separation of neutral lipids by high performance liquid chromatography: quantification by ultraviolet, light scattering and fluorescent detectors *J. Chromatog. B* **685:9-14.**
  22. Frolov, A., Woodford, J.K., Murphy, E.J., Billheimer, J.T., and Schroeder, F. (1996) Spontaneous and protein mediated sterol transfer between intracellular membranes *J. Biol Chem.* **271:16075-16083.**
  23. Frolov, A., Woodford, J.K., Murphy, E.J., Billheimer, J.T., and Schroeder, F. (1996) Fibroblast membrane sterol kinetic domains: Modulation by sterol carrier protein-2 and liver fatty acid binding protein *J. Lipid Res.* **37:1862-1874.**
  24. Prows, D.R., Murphy, E.J., Moncecchi, D., and Schroeder, F. (1996) Intestinal fatty acid-binding protein expression stimulates fibroblast fatty acid esterification *Chem. Phys. Lipids* **84: 47-56.**
  25. Murphy, E.J., Prows, D., Jefferson, J.R., Incerpi, S., Hertelendy, Z., Heyliger, C.E. and Schroeder, F. (1996) Effect of insulin on fatty acid uptake and esterification in L-cell fibroblasts *Arch. Biochem. Biophys.* **335:267-272.**
  26. Fraser, H., Colles, S.M., Woodford, J.K., Frolov, A.A., Murphy, E.J., Schroeder, F., Bernlohr, D.A., and Grund, V. (1997) Fatty acid uptake in diabetic rat adipocytes *Mol. Cell. Biochem.* **167:51-60.**
  27. Murphy, E.J. and Schroeder, F. (1997) Sterol carrier protein-2 mediated cholesterol esterification in transfected L-cell fibroblasts *Biochim. Biophys. Acta* **1345:283-292.**
  28. Stolowich, N.J., Frolov, A., Atshaves, B., Murphy, E.J., Jolly, C.A., Billheimer, J.T., Scott, I.A., and Schroeder, F. (1997) The sterol carrier protein-2 fatty acid binding site: An NMR, Circular Dichroic, and fluorescence spectroscopic determination *Biochem.* **36:1719-1729.**
  29. Frolov, A., Cho, T-H, Murphy, E.J., and Schroeder, F. (1997) Isoforms of rat liver fatty acid binding protein differ in structure and affinity for fatty acids and fatty acyl CoAs *Biochem.* **36:6545-6555.**
  30. Murphy, E.J., Rosenberger, T.A. and Horrocks, L.A. (1997) Effects of maturation on the phospholipid and phospholipid fatty acid compositions in primary rat cortical astrocytes *Neurochem. Res.* **22:1205-1213.**

31. Jolly, C.A., Murphy, E.J., and Schroeder, F. (1998) Differential influence of rat liver fatty acid binding protein isoforms on phospholipid fatty acid composition: Phosphatidic acid biosynthesis and phospholipid fatty acid remodeling *Biochim. Biophys. Acta* **1390:258-268**.
32. Murphy, E.J. (1998) Sterol carrier protein-2 expression increases NBD-stearate uptake and cytoplasmic diffusion in L-cells *Am. J. Physiol.* **275:237-243**.
33. Murphy, E.J. (1998) L-FABP and I-FABP expression increases NBD-stearate uptake and cytoplasmic diffusion in L cells *Am. J. Physiol.* **275:244-249**.
34. Murphy, E.J., Edmondson, R.D., Russell, D.H., Colles, S., and Schroeder, F. (1999) Isolation and characterization of two distinct forms of liver fatty acid binding protein from the rat *Biochim. Biophys. Acta.* **1436:413-425**.
35. Murphy, E.J., Stiles, T. and Schroeder, F. (2000) Sterol carrier protein-2 expression alters phospholipid content and fatty acyl composition in L-cell fibroblasts *J. Lipid Res.* **41:788-796**.
36. Murphy, E.J., Schapiro, M.B., Rapoport, S.I., and Shetty, H.U. (2000) Brain phospholipid composition and levels are altered in Down syndrome brain *Brain Res.* **867:9-18**.
37. Murphy, E.J., Zhang, H., Sorbi, S., Rapoport, S.I., and Gibson, G.E. (2000) Phospholipid composition and levels are not altered in fibroblasts bearing presenilin-1 mutations *Brain Res. Bull.* **52:207-212**.
38. Starodub, O., Jolly, C.A., Atshaves, B.P., Roths, J.B., Murphy, E.J., Kier, A.B., and Schroeder, F. (2000) Sterol carrier protein-2 immunolocalization in endoplasmic reticulum and stimulation of phospholipid formation *Am. J. Phys.* **279:1259-1269**.
39. Murphy, E.J., Prows, D., Stiles, T., and Schroeder, F. (2000) Liver and intestinal fatty acid binding protein expression increases phospholipid content and alters phospholipid fatty acid composition in L-cell fibroblast: Effect of intestinal and liver fatty acid binding proteins *Lipids* **35:729-738**.
40. Yarger, D., Patrick, C.B., Rapoport, S.I., and Murphy, E.J. (2000) A continuous fluorometric assay for phospholipase A<sub>2</sub> activity in mouse brain cytosol *J. Neurosci. Meth.* **100:127-133**.
41. Patrick, C.B., Krzywkowski, P., Ramassamy, C., Poirier, J., Rapoport, S.I., and Murphy, E.J. (2000) Phospholipase A<sub>2</sub> activity is decreased selectively in the hippocampus of aged apolipoprotein E deficient mice *Neurosci. Lett.* **288:211-214**.
42. Murphy, E.J., Rosenberger, T.A., Patrick, C.B., and Rapoport, S.I. (2000) Intravenously injected [1-<sup>14</sup>C]arachidonic acid targets phospholipids, and [1-<sup>14</sup>C]palmitic acid targets neutral lipids in hearts of awake rats *Lipids* **35:891-898**.
43. Slivka, A.P. and Murphy, E.J. (2001) High dose methylprednisolone treatment in experimental focal ischemia *Expt. Neurol.* **167:166-176**.
44. DasGupta, S.F., Rapoport, S.I., Gerschenson, M., Murphy, E.J., Fiskum, G., Russell, S.J., and Chandrasekaran, K. (2001) ATP synthesis is coupled to rat liver mitochondrial RNA



- synthesis *Mol. Cell Biochem.* **221:3-10.**
45. Rosenberger, T.A., Oki, J., Purdon, A.D., Rapoport, S.I., and Murphy, E.J. (2002) Rapid synthesis and turnover of brain microsomal ether phospholipids in the adult rat *J. Lipid Res.* **43:59-68.**
  46. Murphy, E.J. (2002) Sterol carrier protein-2: Not just for cholesterol anymore *Mol. Cell. Biochem.* **239:87-93.**
  47. Golovko, M.Y. and Murphy, E.J. (2004) An improved method for tissue long chain acyl-CoA extraction and analysis *J. Lipid Res.* **45:1777-1782.**
  48. Murphy, E.J., Barceló-Coblijn, G., Binas, B., and Glatz, J.F.C. (2004) Heart fatty acid uptake is decreased in heart fatty acid binding protein gene-ablated mice *J. Biol. Chem.* **279:34481-34488.**
  49. Collison, L.W., Collison, R.E., Murphy, E.J., and Jolly, C.A. (2005) Dietary n-3 polyunsaturated fatty acids increase T-lymphocyte phospholipid mass and acyl-CoA binding protein expression *Lipids* **40:81-87.**
  50. Patrick, C.B., Rosenberger, T.A., McHowat, J., Rapoport, S.I., and Murphy, E.J. (2005) Arachidonic acid incorporation and turnover is decreased in sympathetically denervated rat heart *Am. J. Phys.* **288:2611-2619.**
  51. Murphy, E.J., Owada, Y., Kitanaka, N., Kondo, H., and Glatz, J.F.C. (2005) Brain arachidonic acid incorporation is decreased in heart-fatty acid binding protein gene-ablated mice *Biochemistry* **44:6350-6360.**
  52. Golovko, M.Y., Hovda, J., Zong-Jin, C, Craigen, W.J., and Murphy, E.J. (2005) Tissue-dependent alterations in lipid mass in mice lacking glycerol kinase *Lipids* **40:287-293.**
  53. Castagnet, P.I., Golovko, M.Y., Barceló-Coblijn, G., Nussbaum, R.L., and Murphy, E.J. (2005) Fatty acid incorporation is decreased in astrocytes cultured from alpha-synuclein gene-ablated mice *J. Neurochemistry* **94:839-849.**
  54. Golovko, M.Y., Faergeman, N.J., Cole, N.B., Castagnet, P.I., Nussbaum, R.L., and Murphy, E.J. (2005)  $\alpha$ -Synuclein gene-deletion decreases brain palmitate uptake and alters the palmitate metabolism in the absence of  $\alpha$ -synuclein palmitate binding *Biochemistry* **44:8251-8259.**
  55. Barceló-Coblijn, G., Collison, L.W., Jolly, C.A., and Murphy, E.J. (2005) Dietary  $\alpha$ -linolenic acid increases brain but not heart and liver docosahexaenoic acid levels *Lipids* **40:787-798.**
  56. Ellis, C.E., Murphy, E.J., Mitchell, D.C., Golovko, M.Y., Scaglia, F., Barceló-Coblijn, G., and Nussbaum, R.L. (2005) Mitochondrial lipid abnormality and electron transport chain impairment in mice lacking  $\alpha$ -synuclein *Molecular and Cellular Biology* **25:10190-10201.**
  57. Murphy, E.J., Huang, H-M, Cowburn, R.F., Lannfelt, L, and Gibson, G.E. (2006) Phospholipid mass is increased in fibroblasts bearing the Swedish amyloid precursor

- mutation *Brain Res. Bull.* **69:79-85.**
58. Relling, D.P., Esberg, L.B., Fang, C.X., Johnson, W.T., Murphy, E.J., Carlson, E.C., Saari, J.T., and Ren, J. (2006) High fat diet induced-obesity leads to cardiomyocyte dysfunction and upregulation of Foxo3a transcription factor independent of lipotoxicity and apoptosis *J. Hypertension* **24:549-561.**
  59. Maddock, T.D., Bauer, M.L., Koch, K., Anderson, V.L., Maddock, R.J., Barcelo-Coblijn, G., Murphy, E.J., and Lardy, G.P. (2006) Effect of processing flax in beef feedlot rations on performance, carcass characteristics, and trained sensory panel ratings *J. Anim. Sci.* **84:1544-1551.**
  60. Donarum, E.A., Stephan, D.A., Gupta, M., Switzer, R.C., Pearl, P.L., Snead III, O.C., Jansen, E.E.W., Jakobs, C., Murphy, E.J., and Gibson, K.M. (2006) Expression profiling reveals multiple myelin alterations in murine succinate semialdehyde dehydrogenase deficiency *J. Inherited Met. Dis.* **29:143-156.**
  61. Golovko, M.Y. and Murphy, E.J. (2006) Uptake and metabolism of plasma derived erucic acid by rat brain *J.Lipid Res.* **47:1289-1297.**
  62. Golovko, M.Y., Rosenberger, T.A., Faergeman, N.J., Feddersen, S., Cole, N.B., Pribill, I, Berger, J., Nussbaum, R.L., and Murphy, E.J. (2006) Acyl-CoA synthetase activity links wild-type but not mutant  $\alpha$ -synuclein to brain arachidonate metabolism *Biochemistry* **45:6956-6966.**
  63. Ghribi, O., Golovko, M.Y., Larsen, B., Schrag, M., and Murphy, E.J. (2006) Deposition of iron and  $\beta$ -amyloid plaques is associated with cortical neuronal damage in rabbits fed with long-term cholesterol enriched diets *J. Neurochemistry* **99:438-449.**
  64. Austin, S.A., Floden, A.M., Murphy, E.J., and Combs, C.K. (2006) Alpha-synuclein expression modulates microglial activation phenotype *J. Neurosci.* **26:10558-10563.**
  65. Kronberg, S.L., Barceló-Coblijn, G., Shin, J., Lee, K. and Murphy, E.J. (2006) Bovine muscle n-3 fatty acid content is increased with flaxseed feeding *Lipids* **41:1059-1068.**
  66. Barceló-Coblijn, G., Golovko, M.Y., Berger, J., Weinhofer, I., and Murphy, E.J. (2007) Brain neutral lipids mass is increased in  $\alpha$ -synuclein gene-ablated mice *J. Neurochemistry* **101:132-141.**
  67. Golovko, M.Y., Rosenberger, T.A., Faergeman, N.J., Feddersen, S., and Murphy, E.J. (2007)  $\alpha$ -Synuclein gene ablation increases docosahexaenoic acid incorporation and turnover in brain phospholipids *J. Neurochemistry* **101:201-211.**
  68. Barceló-Coblijn, G., Murphy, E.J., Mills, K., Winchester, B., Jakobs, C., Snead III, O.C., and Gibson, K.M. (2007) Lipid abnormalities in succinate semialdehyde dehydrogenase (*Aldh5a*<sup>-/-</sup>) deficient mouse brains provide additional evidence for myelin alterations *Biochim. Biophys. Acta* **1772:556-562.**
  69. Relling, D.P., Esberg, L.B., Johnson, W.T., Murphy, E.J., Carlson, E.C., Saari, J.T., and Ren, J. (2007) Dietary interaction of high fat and marginal copper deficiency on cardiac contractile function *Obesity* **15:1242-1257.**

70. Kronberg, S.L., Scholljegerdes, E.J., Barceló-Coblijn, G., and Murphy, E.J. (2007) Flaxseed treatments to reduce hydrogenation of  $\alpha$ -linolenic acid by ruman microbes in cattle *Lipids* **42:1105-1111**.
71. Golovko, M.Y. and Murphy, E.J. (2008) Brain prostaglandin formation is increased by  $\alpha$ -synuclein gene-ablation during global ischemia *Neurosci. Lett.* **432:243-247**.
72. Golovko, M.Y. and Murphy, E.J. (2008) An improved LC-MS/MS procedure for brain prostanoid analysis using brain fixation with head-focused microwave irradiation and liquid-liquid extraction *J. Lipid Res.* **49:893-904**.
73. Murphy, C.C., Murphy, E.J., and Golovko, M.Y. (2008) Erucic acid is differentially taken up and metabolized in rat liver and heart *Lipids* **43:391-400**.
74. Collison, L.W., Murphy, E.J., and Jolly, C.A. (2008) Glycerol-3-phosphate acyltransferase-1 regulates murine T-lymphocyte proliferation and cytokine production *Am. J. Phys* **295:1543-1549**.
75. Barceló-Coblijn, G., Murphy, E.J., Othman, R., Moghadasian, M.H., Kashour, T, and Friel, J.K. (2008) Flaxseed oil and fish oil capsule consumption alters human red blood cells n-3 fatty acid composition: A multiple dosing trial comparing two different n-3 fatty acid sources *Am. J. Clin. Nutr.* **88:801-809**.
76. Barceló-Coblijn, G. and Murphy, E.J. (2008) An improved method for separating cardiolipin by HPLC *Lipids* **43:971-976**.
77. Golovko, M.Y., Barceló-Coblijn, G., Castagnet, P.I., Austin, S.A., Combs, C.K., and Murphy, E.J. (2009) The role of  $\alpha$ -synuclein in brain lipid metabolism: A downstream impact on brain inflammatory response *Mol. Cell Biochem.* **326:55-66**.
78. Barceló-Coblijn, G. and Murphy, E.J. (2009) Alpha-linolenic acid and its conversion to longer chain n-3 fatty acids: Benefits for human health and a role in maintaining n-3 fatty acid levels *Prog. Lipid Res.* **48:355-374**.
79. Murphy, E.J. (2009) Brain fixation for analysis of brain lipid-mediators of signal transduction and brain eicosanoids requires head-focused microwave irradiation: A historical perspective *Prost. Other Lipid Mediat.* **91:63-67**.
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International Conference on the Bioscience of Lipids, August 26-30, 2008, Maastricht, The Netherlands.

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75. Murphy, E.J. Brain fatty acid uptake and incorporation: What kinetics tells us about downstream lipid function in brain pathophysiology Am. Soc. Neurochem., March 6-10, 2010, Santa Fe, NM, Trans. Am. Soc. Neurochem. 41:17-18.
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78. Murphy, E.J. The use of biotechnology to alter agronomic properties of *Camelina sativa*: From oil production to herbicide resistance Am. Oil Chem. Soc., May 16-19, 2010, Phoenix, AZ.
79. Murphy, C.C. and Murphy, E.J. Processing method used to crush *Camelina sativa* inhibits myrosinase activity in *Camelina* meal Am. Oil Chem. Soc., May 16-19, 2010, Phoenix, AZ.
80. Murphy, E.J. Alpha-synuclein is a key regulator of brain inflammatory response via its regulation of brain arachidonic acid metabolism Am. Oil Chem. Soc., May 16-19, 2010, Phoenix, AZ.
81. Murphy, E.J. Alpha-linoleic acid is a key dietary source of n-3 fatty acids: What kinetics tells us Am. Oil Chem. Soc., May 16-19, 2010, Phoenix, AZ.
82. Koivu, K., Kushinov, V., Kajjalainen, S., Weselake, R., and Murphy, E.J. Use of biotechnology to increase oil content of *Camelina sativa* Am. Oil Chem. Soc., May 16-19,

2010, Phoenix, AZ.

83. Koivu, K., Kushinov, V., Kaijalainen, S., Weselake, R., and Murphy, E.J. Production of a high lauric acid containing *Camelina sativa* using biotechnology Am. Oil Chem. Soc., May 16-19, 2010, Phoenix, AZ.
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85. Kakani, R., Haq, A., Fowler, J., Murphy, E.J., Rosenberger, T.A., Berhow, M., Bailey, C.A. Quality characteristics and fatty acid composition of eggs from hens fed *Camelina sativa* (camelina meal) Poultry Science Association, July 11-15, 2010, Denver, CO.
86. Murphy, C.C., Golovko, M.Y., Rojanathammanee, L., Combs, C.K., and Murphy, E.J. Brain prostaglandin synthesis is increased during LPS-induced inflammation in alpha-synuclein deficient mice Am. Soc. Neurochem., March 19-23, 2011, St. Louis, MO Trans. Am. Soc. Neurochem. 42:xx.
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89. Murphy, E.J. Importance of proper statistical analysis in lipid biochemistry: From basic to clinical research. Am. Oil Chem. Soc. April 29-May 1, 2013, Montreal, Canada.
90. Murphy, E.J. Role of lipid binding proteins in brain fatty acid uptake and downstream impact on inflammation. Am. Soc. Neurochem, March 8-12, 2014, Long Beach, CA, Trans. Am. Soc. Neurochem. 45:xx
91. Seeger, D.R., Murphy, C.C., and Murphy, E.J. Dibutyryl-cAMP modulates expression of key enzymes associated with acyl-CoA metabolism in primary murine astrocytes. Am. Soc. Neurochem, March 8-12, 2014, Long Beach, CA, Trans. Am. Soc. Neurochem. 45:xx
92. Picklo, M. and Murphy, E.J. A high-fat, high-oleic acid diet, but not a high-fat, saturated diet, reduces hepatic n-3 fatty acid content in mice. Lipid Nutrition and Metabolism is Human Health, A Post-Canadian Nutrition Society Workshop, May 31-June 1, 2015, University of Manitoba, Winnipeg, MB
93. Seeger, D.R., Murphy, C.C., and Murphy, E.J. Dibutyryl-cAMP treatment of murine astrocytes alters arachidonic acid and palmitic acid metabolism via regulating key acyl-CoA metabolism genes. Lipid Nutrition and Metabolism is Human Health, A Post-Canadian Nutrition Society Workshop, May 31-June 1, 2015, University of Manitoba, Winnipeg, MB.
94. Seeger, D.R. and Murphy, E.J. Mouse strain impacts fatty acid uptake and trafficking in liver, heart, and brain: A comparison of C57bl/6j and Swiss Webster mice. Lipid Nutrition and Metabolism is Human Health, A Post-Canadian Nutrition Society Workshop, May

31-June 1, 2015, University of Manitoba, Winnipeg, MB.

95. Seeger, D.R. and Murphy, E.J. Is alpha-synuclein a molecular switch for regulating microglial phenotype in the brain? Am. Soc. Neurochem, March 19-23, 2016, Denver, CO, Trans. Am. Soc. Neurochem. 47:xx
96. Martin, G.G., Chung, S., Landrock, D., Landrock, K.K., Huang, H., Dangott, L.J., Peng, X., Kaczocha, M., Murphy, E.J., Kier, A.B., and Schroeder, F. Fatty acid binding protein-1 ablation differentially impacts the brain endocannabinoid system of male versus female mice. Marijuana and Cannabinoids: A Neuroscience Research Summit, NIH, March 22-23, 2016, Bethesda, MD.
97. Picklo Sr., M. and Murphy, E.J. Obesogenic diets enriched in oleic acid vs. saturated fatty acids differentially modify polyunsaturated fatty acid composition in liver and visceral adipose. Experimental Biology, April 2-6, 2016, San Diego, CA.

### **INVITED SEMINARS AND ORAL PRESENTATIONS**

1. Differential effects of fatty acid binding proteins on cellular fatty acid uptake and lipid metabolism. PUFA in Maternal and Child Health, September 10-13, 2000 Kansas City, MO.
2. Blood-Brain Barrier Penetrance of Erucic Acid: Effectiveness of Therapy for Treatment of X-linked Adrenoleukodystrophy. 11<sup>th</sup> Annual Myelin Project Meeting, October 6-8, 2000 Leesburg, VA.
3. The Role of Plasmalogens in Lipid-mediated Signal Transduction. University of North Dakota, BIMD Lecture Series, October 20, 2000 Grand Forks, ND.
4. Sterol carrier protein-2: Not just for cholesterol anymore. 4<sup>th</sup> International Lipid Binding Protein Conference, June 10-12, 2001 Maastricht, The Netherlands.
5. Is erucic acid a therapy for X-adrenoleukodystrophy? International United Leukodystrophy Foundation Conference, July 17-22, 2001 DeKalb, IL.
6. Lorenzo's oil and the blood brain barrier. 12<sup>th</sup> Annual Myelin Project meeting, September 28-30, 2001 Paris, France.
7. Lorenzo's oil and the blood brain barrier: Ramifications for the treatment of X-ALD, University of North Dakota, Department of Anatomy, February 11, 2002 Grand Forks, ND.
8. Intracellular lipid binding proteins influence cellular lipid metabolism. ISSFAL 2002 meeting, May 7-11, 2002 Montreal, Canada.
9. Effect of lipid binding proteins on cellular lipid metabolism, Grand Forks Human Nutrition Research Center, ARS, USDA, August 13, 2002 Grand Forks, ND.
10. Lorenzo's oil and the blood brain barrier: Ramifications for the treatment of X-ALD, Department of Biology, St. Olaf College, March 3, 2003 Northfield, MN.
11. Lorenzo's oil and the blood brain barrier: Ramifications for the treatment of X-ALD, Department of Chemistry, Gustavus Adolphus College, March 7, 2003 St. Peter, MN.
12. Role of fatty acid binding proteins in cellular fatty acid uptake and trafficking: Similarities

between cells and mice, Division of Nutrition, The University of Texas at Austin,  
September 29, 2003 Austin, TX.

13. Is alpha-synuclein a fatty acid binding protein in brain?, 1<sup>st</sup> Annual COBRE Symposium, University of North Dakota, October 4, 2003, Grand Forks, ND.
14. Is alpha-synuclein a fatty acid binding protein in the brain? Society of Argentine Neurochemistry, October 25, 2003 Los Cocos, Argentina.
15. Role of fatty acid binding proteins in cellular fatty acid uptake and trafficking: Similarities between cells and mice, Department of Biochemistry, School of Medicine, University of Cordoba, October 27, 2003 Cordoba, Argentina.
16. Brain fatty acid uptake: Role of alpha-synuclein and heart-type fatty acid binding protein. 5<sup>th</sup> International Conference on Lipid Binding Proteins, September 28, 2004 Sendai, Japan.
17. Fatty acid binding proteins: From cells to mice. Richardson Centre for Functional Foods and Nutraceuticals, University of Manitoba, October 18, 2004 Winnipeg, Canada.
18. Role of FABP in cellular fatty acid uptake and trafficking: From cells to mice. Hastings College, November 19, 2004 Hastings, NE.
19. Role of FABP in cellular fatty acid uptake and trafficking: From cells to mice. Department of Pharmacology, Physiology, and Therapeutics, University of North Dakota, December 3, 2004 Grand Forks, ND.
20. Brain fatty acid uptake: Role of alpha-synuclein and heart-type fatty acid binding protein. Basic Science Seminar, Loma Linda School of Medicine, February 10, 2005 Loma Linda, CA.
21. High omega-3 foods: Improved health and well-being, 2005 Research Results and Technology Conference, Northern Great Plains Research Laboratory, USDA, ARS, February 22, 2005 Mandan, ND.
22. Impact of fatty acid binding proteins on cellular lipid metabolism. Department of Chemistry, University of North Dakota, March 11, 2005 Grand Forks, ND.
23. Heart-type fatty acid binding protein increases both brain and heart fatty acid uptake. FEBS Workshop on Recent Advances in Lipid Metabolism and Related Disorders, June 23, 2005 Dijon, France.
24. Impact of alpha-synuclein on brain lipid metabolism. Brain Research Institute, Medical University of Vienna, August 29, 2005 Vienna, Austria.
25. Role of heart-type fatty acid binding protein on heart and brain fatty acid metabolism. Department of Nutrition, The Ohio State University, February 9, 2006 Columbus, OH.
26. Alpha-synuclein modulates brain fatty acid metabolism. American Society for Neurochemistry, March 13, 2006 Portland, OR.
27. ALA vs. DHA: Which is better or does it really matter? Department of Nutrition, University of Alberta, August 23, 2006 Edmonton, Alberta.



28. Unraveling the function of alpha-synuclein in the brain: A role in lipid metabolism with downstream effects on cellular function. NIH, NIAAA, September 26, 2006 Rockville, MD.
29. Unraveling the function of alpha-synuclein in the brain: A role in lipid metabolism with downstream effects on cellular function. Tver State Medical Academy, October 19, 2006 Tver, Russia.
30. Unraveling the function of alpha-synuclein in the brain: A role in lipid metabolism with downstream effects on cellular function. Department of Pharmacology, University of Minnesota, December 8, 2006, Minneapolis, MN.
31. An odyssey in the study of lipid metabolism: From cells to Man. Department of Human Nutritional Sciences. University of Manitoba, February 28, 2007, Winnipeg, Manitoba.
32. Unraveling the function of alpha-synuclein in the brain: A role in lipid metabolism with downstream effects on cellular function. Buck Institute, May 25, 2007, Novato, CA.
33.  $\alpha$ -Synuclein is a key mediator of brain fatty acid metabolism and inflammatory response. 6<sup>th</sup> International Conference on Lipid Binding Proteins, June 5, 2007, Burnaby, British Columbia.
34. Evidence of ALA conversion in rats: A tissue selective process. Canadian Nutrition Congress, June 21, 2007 Winnipeg, Manitoba.
35. *Camelina sativa*: An ideal opportunity for biodiesel? 125<sup>th</sup> Anniversary Meeting of the Vavilov Institute of Plant Industry, November 27, 2007, St. Petersburg, Russia.
36.  $\alpha$ -Synuclein is a key mediator of brain fatty acid metabolism and inflammatory response. Department of Physiology, Michigan State University, December 19, 2007, East Lansing, MI.
37. Unraveling the function of  $\alpha$ -synuclein in the brain: A role in lipid metabolism with downstream effects on cellular function. Department of Biochemistry, The Ohio State University, March 11, 2008, Columbus, OH.
38. So why is alpha-synuclein's impact on lipid metabolism important anyway? Department of Anatomy and Cell Biology, University of North Dakota, March 23, 2009, Grand Forks, ND.
39. So why is alpha-synuclein's impact on lipid metabolism important anyway? Department of Molecular and Integrative Physiology, University of Illinois, October 22, 2009, Urbana-Champaign, IL.
40. ALA-containing oils are excellent sources of dietary n-3 fatty acids: What kinetics tells us. 2009 International Society for Nutraceuticals and Functional Foods Conference, November 3, 2009, San Francisco, CA.
41. Brain fatty acid uptake and incorporation: What kinetics tells us about downstream lipid function in brain pathophysiology. American Society for Neurochemistry, March 3, 2010, Santa Fe, NM.
42. The use of biotechnology to alter agronomic properties of *Camelina sativa*: From oil production to herbicide resistance. American Oil Chemists' Society, May 17, 2010,

Phoenix, AZ.

43. Alpha-linoleic acid is a key dietary source of n-3 fatty acids: What kinetics tells us. American Oil Chemists' Society, May 18, 2010, Phoenix, AZ.
44. Alpha-synuclein is a key regulator of brain inflammatory response via its regulation of brain arachidonic acid metabolism. American Oil Chemists' Society, May 18, 2010, Phoenix, AZ.
45. Unraveling the function of  $\alpha$ -synuclein in the brain: A role in lipid metabolism with downstream effects on cellular function. Department of Biology, University of Balearic Islands, June 7, 2010, Palma de Mallorca, Spain.
46. Brain fatty acid uptake and incorporation: What kinetics tells us about downstream lipid function in brain pathophysiology. COBRE Symposium, University of North Dakota, October 15, 2010, Grand Forks, ND.
47. The intersection of plant biotechnology, plant made pharmaceuticals, biofuels, and mammalian lipid metabolism: Life of an academic entrepreneur. Biomedical Sciences Seminar, University of North Dakota, December 3, 2010, Grand Forks, ND.
48. Teaching lipid biochemistry and nutrition in graduate education American Oil Chemist's Society, May, 2011, Cincinnati, OH.
49. Alpha-linolenic acid is a vital source for n-3 enriched foods for human health. American Oil Chemists' Society, May 2011, Cincinnati, OH.
50. Scientific Misconduct: View of an Editor-in-Chief, 2012 Quest for Research Excellence, a meeting of the Office of Research Integrity, March 15, 2012, Washington, D.C.
51. Camelina: A platform for biofuels and biopharmaceuticals, Agricultural Research Service, March 26, 2012, Maricopa, AZ.
52. Unraveling the function of  $\alpha$ -synuclein in the brain: A role in lipid metabolism with downstream effects on cellular function. Department of Pharmacology, University of Manitoba, April 27, 2012, Winnipeg, Canada.
53. Are you a Good Citizen of Science? Strategies for Responsible Peer-Review and Beyond, Graduate School of Arts and Sciences, Columbia University, June 18, 2012, New York, NY.
54. Citations: The rules they don't teach you and other critical unspoken rules on publishing. Graduate School of Arts and Sciences, Columbia University, June 19, 2012, New York, NY.
55. Science careers and interviewing: What matters and what doesn't or start building your credentials today. Graduate School of Arts and Sciences, Columbia University, June 20, 2012, New York, NY.
56. Unraveling the function of  $\alpha$ -synuclein in the brain: A role in lipid metabolism with downstream effects on cellular function. Department of Biochemistry and Molecular Biology, Saint Louis University, November 5, 2012, St. Louis, MO.

57. Importance of alpha-linolenic acid in human diets: The other n-3 fatty acid Grand Forks Human Nutrition Center, ARS, 16 January 2012, Grand Forks, ND.
58. Importance of proper statistical analysis in lipid biochemistry: From basic to clinical research. American Oil Chemists' Society, May 2013, Montreal, Canada.
59. Role of lipid binding proteins in brain fatty acid uptake and downstream impact on inflammation, American Society for Neurochemistry, March 2014, Long Beach, CA.
60. Scientific misconduct and you: Why do we care. Workshop at American Society for Neurochemistry, March 2014, Long Beach, CA.
61. Metabolic syndrome and beef consumption: A targeted group for flax-fed beef? 65<sup>th</sup> Flax Institute of the United States meeting, March 27, 2014, Fargo, ND.
62. Ethical publishing and you: What to do and what not to do. American Oil Chemists' Society, May 5, 2014, San Antonio, TX.
63. Brain lipid binding proteins: Role in brain fatty acid uptake and downstream impact on inflammation. 50<sup>th</sup> Anniversary Symposium for Lipids, American Oil Chemists' Society, May 4, 2015, Orlando, FL.
64. How peer review advances your career trajectory. American Oil Chemists' Society, May 4, 2015, Orlando, FL.
65. Lipid Techniques: From old to new. Lipid Nutrition and Metabolism is Human Health, A Post-Canadian Nutrition Society Workshop, May 31, 2015 University of Manitoba, Winnipeg, MB.
66. Camelina as an oil seed crop: What does the future hold? Agriculture for Life, Life for Agriculture, June 4, 2015, University of Agronomic Sciences and Veterinary Medicine of Bucharest, Bucharest, Romania.
67. Brain lipid binding proteins: Role in brain fatty acid uptake and downstream impact on inflammation. Faculty of Veterinary Medicine, University of Agronomic Sciences and Veterinary Medicine, June 5, 2015, Bucharest, Romania.

