**CURRICULUM VITAE**

# **Matthew K. Ross, Ph.D.**

Department of Comparative Biomedical Sciences

Center for Environmental Health Sciences

College of Veterinary Medicine

Mississippi State University

P.O. Box 6100 (Courier: 240 Wise Center Dr.)

Mississippi State, MS 39762-6100

Phone: (662) 325-5482; E-mail: [mross@cvm.msstate.edu](mailto:mross@cvm.msstate.edu)

**Education**

1998 **Ph.D., Molecular Toxicology**

University of California at Irvine

1989 **B.S., Chemistry**

University of California at Berkeley

**Research and Professional Experience**

08/19–Present **Professor,** Mississippi State University

Department of Comparative Biomedical Sciences

Center for Environmental Health Sciences

College of Veterinary Medicine

08/10–7/19 **Associate Professor,** Mississippi State University

(Awarded tenure, July 2010)

Department of Basic Sciences (renamed Comparative Biomedical Sciences)

Center for Environmental Health Sciences

College of Veterinary Medicine

01/04–07/10 **Assistant Professor,** Mississippi State University

Department of Basic Sciences

Center for Environmental Health Sciences

College of Veterinary Medicine

10/99–12/03 **Postdoctoral Fellow**

Curriculum in Toxicology

University of North Carolina, Chapel Hill

2/98–9/99 **Postdoctoral Fellow**

Dept. of Community & Environmental Medicine

School of Medicine

University of California, Irvine

9/92–2/98 **Research Assistant** (graduate student)

Dept. of Community & Environmental Medicine

Environmental Toxicology Graduate Program

School of Medicine

University of California, Irvine

7/89–8/92 **Research Chemist/Group Leader**

Plant/Soil Metabolism Group

PTRL-West, Richmond, CA

1987–1989 **Chemistry Stockroom/Teaching Assistant**

College of Chemistry

University of California, Berkeley

**Awards/Honors Received**

*2021 MSU Alumni Association Outstanding Graduate Student Mentor Award*

*2019 College of Veterinary Medicine Faculty Research Award, Office of Research and Economic*

*Development, MSU*

*2015 Visiting Foreign Scientist, Jiangsu Academy of Agricultural Sciences (JAAS), June 1-30, 2015, Nanjing, China*

*2012 Honorary Professor, Jiangsu Academy of Agricultural Sciences (JAAS), Nanjing, China*

*2011 Mississippi Veterinary Medical Association (MVMA) Faculty Award, MSU*

*2010 Richard C. Adkerson Faculty Award, MSU*

*2008 Pegasus Dean’s Research Award, College of Veterinary Medicine, MSU*

*2008 Pfizer Animal Health Research Award, College of Veterinary Medicine, MSU*

*2008 College of Veterinary Medicine Faculty Research Award, Office of Research and Economic*

*Development, MSU*

*2001-2003 National Research Service Award (NRSA) from NIH (NIH postdoc fellowship, F32 ES11111)*

## *1997-1998 UC Irvine Dissertation Fellowship, University of California, Irvine*

### *1997 UC Irvine Cancer Center Travel Award, University of California, Irvine*

#### *1994 Society of Toxicology Travel Award, University of California, Irvine*

### *1986 Scholarship to obtain B.S. at UC Berkeley ($10,000)*

**PROFESSIONAL SOCIETIES**

American Society of Biochemistry and Molecular Biology (ASBMB)

American Chemical Society (ACS)

Society of Toxicology (SOT)

***RESEARCH (FTE 75%)***

**PEER-Reviewed Publications**

97. S.H. Elder, **M.K. Ross**, A.J. Nicaise, I.N. Miller, A.N. Breland, A.R.S. Hood (2024) Development of in situ forming implants for controlled delivery of punicalagin. *International Journal of Pharmaceutics*.[**652**](https://www.sciencedirect.com/journal/international-journal-of-pharmaceutics/vol/652/suppl/C), 123842.

96. I.M. Llada, R.S. Mote, N.S. Hill, J.M. Lourenco, D.P. Jones,G. Suen, **M.K. Ross**, and N.M. Filipov (2024) Ruminal ergovaline and volatile fatty acid dynamics: association with poor performance and a key growth regulator in steers grazing toxic tall fescue. *Environ. Toxicol. Pharmacol*. **105**, 104354.

95. Brown, C., Mitsch, M., Blankenship, K., Campbell, C., Pelanne, M., Sears, J., , Bell, A., Olivier, A.K., **Ross, M.K.**, Archer, T., and Kaplan, B.L.F. (2023) Canine Immune Cells Express High Levels of CB1 and CB2 Cannabinoid Receptors and Cannabinoid-Mediated Alteration of Canine Cytokine Production is Vehicle-Dependent. *Vet. Immunol. Immunopathol*. **265**, 110667

94. Phillips, M.\*, Adekanye, O.\*, Borazjani, A., Crow, J.A., and **Ross, M.K.** (2023) CES1 Releases Oxylipins from Oxidized Triacylglycerol (oxTAG) and Regulates Macrophage oxTAG/TAG Accumulation and PGE2/IL-1β Production. *ACS Chem. Biol.* **18**(7),1564-1581. \*Both authors contributed equally.

93. Szafran, B.N., Nichols, J., Nicaise, A., Borazjani, A.,Carr, R.L., Wilson, J.R., **Ross,** **M.K.**, and Kaplan, B.L.F. (2023) *Cnr1* knockout has minimal impact on chlorpyrifos-mediated effects in the mouse endocannabinoid system, but it does alter lipopolysaccharide-induced cytokine levels in splenocytes. *Chem-Biol. Interact.* **375**,110425. doi: 10.1016/j.cbi.2023.110425.

92. Kaplan, B.L.F., Swanson, E.A., **Ross, M.K.**, Olivier, A.K., Guo-Ross, S.X., Burroughs, K.J., Ross, A.K., Matula, M., Tarbox, T., Greenberg, M., Carr, R.L. (2023) Nanochannel Delivery System for CBD: Sustained Low Level Plasma Levels without Liver Toxicity. *J. Drug Deliv. Sci.* *Technol.* **79**, 104029.

91. Szafran, B.L., Borazjani, A, Scheaffer, H., Crow, J.A., McBride, A.M., Adekanye, O., Wonnacott, C.B., Lehner, R., Kaplan, B.L.F., **Ross, M.K.** (2022) Carboxylesterase 1d inactivation augments lung inflammation in mice. *ACS Pharmacology & Translational Science*. **5**(10), 919-931. [doi.org/10.1021/acsptsci.2c00098](https://doi.org/10.1021/acsptsci.2c00098)

90. Elder, S., Roberson, J.G., Warren, J., Lawson, R., Young, D., Stokes, S., **Ross, M.K.** (2022) Evaluation of Electrospun PCL-PLGA for Sustained Delivery of Kartogenin. *Molecules*. **27**(12), 3739. doi: 10.3390/molecules27123739.

89. Backer, B.S., Meek, E.C., **Ross, M.K.**, Chambers, J.E. (2022) Pharmacokinetics of Three Novel Pyridinium Aldoxime Acetylcholinesterase Reactivators in Female Rats. *Toxicol. Appl. Pharmacol.* **446**, 116046. doi: 10.1016/j.taap.2022.116046.

88. Aloufi, N., Namkung, Y., Traboulsi, H., Wilson, E., Laporte, S.A., Kaplan, B.L.F., **Ross M.K.**, Nair, P., Eidelman, D.H., Baglole, C.J. (2022) Standardized cannabis smoke extract induces inflammation in human lung fibroblasts. *Front. Pharmacol.* **13**, 852029. doi: 10.3389/fphar.2022.852029. 

87. Kondakala, S., **Ross, M.K.**, Chambers, J.E., Howell, G.E. III. (2022) Effect of high-fat diet on the toxicokinetics and toxicodynamics of chlorpyrifos following acute exposure in male C57BL/6J mice. *J. Biochem. Mol. Toxicol.* **36**(6), e23028. doi: 10.1002/jbt.23028.

86. Kondakala, S., Heinen, L., McDevitt, E. **Ross, M.K.,** Howell, G.E. III. (2022) Effects of chlorpyrifos on non-cholinergic toxicity endpoints in immortalized and primary rat hepatocytes under normal and hepatosteatotic conditions. *Toxicol. In Vitro.* **80**, 105329. doi: 10.1016/j.tiv.2022.105329. 

85. Coll, A., **Ross, M.K.**, Williams, M., Wills, R., Mackin, A., Thomason, J. (2022) Effects of Washing Units of Canine Red Blood Cells on Storage Lesions. *J. Vet. Int. Med.* **36**(1), 66-77.

84. Szafran, B.N., Borazjani, A, Seay, C., Carr, R.L, Lehner, R, Kaplan, B.L.F., **Ross, M.K.** (2021) Effects of Chlorpyrifos on Serine Hydrolase Activities, Lipid Mediators, and Immune Responses in Lungs of Neonatal and Adult Mice. *Chem. Res. Toxicol.* **34**(6),1556-1571.

83. Scheaffer, H.L., Borazjani, A., Szafran, B.N., **Ross, M.K.** (2020) Inactivation of CES1 blocks prostaglandin D2 glyceryl ester catabolism in monocytes/macrophages and enhances its anti-inflammatory effects, whereas the pro-inflammatory effects of prostaglandin E2 glyceryl ester are attenuated. *ACS Omega.* **5**(45), 29177-29188.

82. Ravichandran, A., Escano, J., Lee, J.H., **Ross, M.K.**, Austin, F., Orugunty, R., Lu, S-E, and Smith, J. (2020) Formulation, pharmacological evaluation, and efficacy studies of occidiofungin, a novel antifungal. *Antimicrobial Agents and Chemotherapy.* AAC.01737-20. doi: 10.1128/AAC.01737-20.

81. Ayoola, M.B., Nakamya, M.F., Shack, L.A., Park, S., Lim, J., Lee, J.H., **Ross, M.K.**, Eoh, H., Nanduri, B. (2020) SP\_0916 is an arginine decarboxylase that catalyzes the synthesis of agmatine, which is critical for capsule biosynthesis in Streptococcus pneumoniae. *Frontiers in Microbiology*. **11**, 578533.

80. Szafran, B.N., Pinkston, R., Perveen, Z., **Ross, M.K.**, Morgan, T., Paulsen, D., Penn, A., Kaplan, B.L.F., Noel, A. (2020) Electronic-Cigarette Vehicles and Flavoring Affect Lung Function and Immune Responses in a Murine Model. *Int. J. Mol. Sci*. **21**(17): E6022. PMID: 32825651

79. Ho, C.P., Borazjani, A., **Ross, M.K.\***, Wang, C.\* (2020) Effects of the Monoacylglycerol Lipase Inhibitor JZL184 on Chickens Infected with Avian Pathogenic Escherichia coli O78-infected Chickens: A Preliminary Pharmacokinetic and Infection Study. *Can. J. Vet. Res*. **84**, 189-197. \*co-corresponding authors (both contributed equally). PMID: 32801453

78. Carr, R.L., Alugubelly, N., de Leon, K., Loyant, L., Mohammed, A.N., Patterson, M.E., **Ross, M.K.**, Rowbotham, N.E. (2020) Inhibition of Fatty Acid Amide Hydrolase by Chlorpyrifos in Juvenile Rats Results in Altered Exploratory and Social Behavior as Adolescents. Neurotoxicology. **77**, 127-136. PMID: 31931040

77. [Grunewald](https://www.sciencedirect.com/science/article/pii/S0031938418304190?via%3Dihub" \l "!), Z.I., [Lee](https://www.sciencedirect.com/science/article/pii/S0031938418304190?via%3Dihub#!), S., [Kirkland](https://www.sciencedirect.com/science/article/pii/S0031938418304190?via%3Dihub#!), R., [**Ross**](https://www.sciencedirect.com/science/article/pii/S0031938418304190?via%3Dihub#!)**, M.**, [de La Serre](https://www.sciencedirect.com/science/article/pii/S0031938418304190?via%3Dihub#!), C.B. (2019) Cannabinoid receptor type-1 partially mediates metabolic endotoxemia-induced inflammation and insulin resistance. *Physiology & Behavior*. **199**, 282-291. PMID: 30502357

76. Szafran, B., Lee J.H., Borazjani, A., Morrison, P, Zimmerman, G., Andrzejewski, K., **Ross M.K.**\*, Kaplan, B.L.F.\* (2018) Characterization of Endocannabinoid Metabolizing Enzymes in Human Peripheral Blood Mononuclear Cells Under Inflammatory Conditions. *Molecules*. **23**, 12. \*co-corresponding authors (both contributed equally). PMID: 30513753

***Publications as Associate Professor at MSU (2010-19; Pub. #’s: 27-75)*:**

75. Sheppe, A.E.F., Kummari, E., Walker, A., Richards, A., Hui, W.W., Lee, J.H., Mangum, L., Borazjani, A., **Ross, M.K.**, Edelmann, M.J. (2018) PGE2 augments inflammasome activation and M1 polarization in macrophages infected with *Salmonella Typhimurium* and *Yersinia enterocolitica*. *Frontiers in Microbiology*. **9**, 2447.

74. Guyton, K.Z., Rusyn, I., Chiu, W.A., Corpet, D.E., van den Berg, M., **Ross, M.K.**, Christiani, D.C., Beland, F.A., Smith, M.T. (2018) [Re: 'Application of the key characteristics of carcinogens in cancer hazard evaluation': response to Goodman, Lynch and Rhomberg.](https://www.ncbi.nlm.nih.gov/pubmed/29982359) *Carcinogenesis.* **39**, 1091-1093.

73. Howell, G.E. III, Kondakala, S., Holdridge, J., Lee, J.H., **Ross, M.K.** (2018) Increased inhibition of hepatic carboxylesterase and fatty acid amide hydrolase activities following subacute exposure to chlorpyrifos in high fat fed male C57BL/6J mice. *Food Chem. Toxicol*. **118**, 821-829.

72. Mangum, L.C., Hou, X., Borazjani, A., Lee, J.H., **Ross, M.K.**\*, Crow, J.A.\* (2018) Silencing Carboxylesterase 1 in Human THP-1 Macrophages Perturbs Genes Regulated by PPARγ/RXR and RAR/RXR: Downregulation of CYP27A1-LXRα Signaling. *Biochem. J*. **475**, 621-642. \*co-corresponding authors (both contributed equally).

71. Guyton, K.Z., Rusyn, I., Chiu, W.A., Corpet, D.E., van den Berg, M., **Ross, M.K.**, Christiani, D.C., Beland, F.A., Smith, M.T. (2018) Application of the Key Characteristics of Carcinogens in Cancer Hazard Identification. *Carcinogenesis*. **39**, 614-622.

70. Matthews, A.T. and **Ross, M.K.** (2018) Role of lysyl oxidase on microvascular function. *Am. J. Physiol. Heart and Circulatory Physiol.* **314**, H784-H786.

69. Lee, J.H., Hou, X., Kummari, E., Borazjani, A., Edelmann, M.J., **Ross, M.K.** (2018) Endocannabinoid hydrolases in avian HD11 macrophages identified by chemoproteomics: inactivation by small molecule inhibitors and pathogen-induced downregulation of their activity. *Mol. Cell. Biochem.* **444**, 125-141.

68. Kondakala, S., Lee, J.H., **Ross, M.K.**, Howell G.E. III (2017) Effects of acute exposure to chlorpyrifos on cholinergic and non-cholinergic targets in normal and high-fat fed male C57BL/6J mice. *Toxicol. Appl. Pharmacol.* **337**, 67-75.

67. Pati, S., Krishna, S., Lee, J.H., **Ross, M.K.**, de La Serre, C., Harn Jr., D.A., Wagner, J.J., Filipov, N.M., Cummings, B.S. (2018) Effects of high-fat diet and age on the blood lipidome and circulating endocannabinoids of female C57BL/6 mice. *BBA-Molecular and Cell Biology of Lipids*. **1863**, 26-39.

66. Fizzano, K.M., Claude A.J., Kuo L.H., Eells J.B., Hinz S.B., Thames B.E., **Ross M.K.**, Linford R.L., Wills R.W., Olivier A.K., Archer T.M. (2017) Evaluation of a modified maxillary nerve block for canine rhinoscopy with nasal biopsy. *Am. J. Vet. Res*. **78**, 1025-1035.

65. Buntyn R.W., Alugubelly, N., Hybart R.L., Mohammed A.N., Nail C.A., Parker G.C., **Ross M.K.**, Carr R.L. (2017) Inhibition of Endocannabinoid Metabolizing Enzymes in Peripheral Tissues Following Developmental Chlorpyrifos Exposure. *Int. J. Toxicol.* **36**, 395-402.

64. Muro S., Lee J.H., Stokes J., **Ross M.K.**, Archer T.M., Wills R.W., Mackin A.J., Thomason J.M. (2017) Effects of Leukoreduction and Storage on Erythrocyte Phosphatidylserine Expression and Eicosanoid Levels in Units of Canine Packed Red Blood Cells. *J. Vet. Intern. Med.* **31**,410-418.

63. Matthews A.T.\*, Lee J.H.\*, Borazjani A., Mangum L.C., Hou X., **Ross** **M.K.** (2016) Oxyradical Stress Increases the Biosynthesis of 2-Arachidonoylglycerol: involvement of NADPH Oxidase. *Am. J. Physiol. Cell Physiol.* **311***,* C960-C974. \*These authors contributed equally to this work.

62. Chambers, J.E., Chambers, H.W., Funck, K.W., Meek, E.C., Pringle, R.B., and **Ross, M.K.** (2016) Efficacy of Novel Phenoxyalkyl Pyridinium Oximes as Brain-Penetrating Reactivators of Cholinesterase Inhibited by Surrogates of Sarin and VX. *Chemico-Biol. Interact*. **259** (Pt B), 154-159.

61. Portier, C.J. et al. (M.K. Ross was one of 93 co-authors) (2016) Differences on the carcinogenicity of glyphosate between the International Agency for Research on Cancer (IARC) and the European Food Safety Agency (EFSA). *J. Epidemiol. Community Health*. **70**, 741-745.

60. Mangum, L.C., Mangum, L.H., Chambers, J.E., **Ross, M.K.**, Meek, E.C., Wills, R.W., and Crow, J.A. (2016) Serum levels of the organochlorine trans-nonachlor, but not urinary isoprostanes, improves the ability of a multivariable regression model to predict atherosclerosis outcomes. *J. Toxicol. Environ. Health, Part A.* **8**, 1-11.

59. Mangum, L.H., Crow, J.A., Stokes, J.V., Howell III, G.E., **Ross**, **M.K.**, Pruett, S.B., Chambers, J.E. (2016) Exposure to p,p’-DDE alters macrophage reactivity and increases macrophage numbers in adipose stromal vascular fraction. *Toxicol. Sci.* **150**, 169-177.

58. Carr, R.L., Armstrong, N.H., Buchanan, A.T., Eells, J.B., Mohammed, A.N., **Ross, M.K.**, Nail, C.A. (2017) [Decreased anxiety in juvenile rats following exposure to low levels of chlorpyrifos during development.](https://www.ncbi.nlm.nih.gov/pubmed/26642910) *Neurotoxicology*. **59**,183-190.

57. Matthews, A.T. and **Ross, M.K.** (2015) Oxyradical stress, endocannabinoids, and atherosclerosis. *Toxics.* **3**, 481-498.

56. **Ross, M.K.**, Pluta, K., Bittles, V., Borazjani, A., Crow, J.A. (2016) Interactions of the Serine Hydrolase KIAA1363 with Organophosphorus Agents: Evaluation of Potency and Kinetics. *Arch. Biochem. Biophys*. **590**,72-81.

55. Szafran, B., Borazjani A., Lee, J.H., **Ross, M.K.**, Kaplan, B.L.F. (2015) Lipopolysaccharide Suppresses Carboxylesterase 2g Activity and 2-Arachidonylglycerol Hydrolysis: A Possible Mechanism to Regulate Inflammation. *Prostaglandins and Other Lipid Mediators*. **121**, 199-206.

54. Blake, R.R., Lee, J.H., **Ross, M.K.**, Archer, T.M., Wills, R.W., Mackin, A.J., Thomason, J.M. (2017) Evaluation of eicosanoid concentrations in stored units of canine packed red blood cells. *J. Am. Vet. Med. Assoc*. **250**, 191-198.

53. **Ross, M.K.** and Wang, R. (2015) Expanding the toolkit for the serine hydrolases. *Chemistry & Biology* **22**, 808-809.

52. Guyton, K.Z., Loomis, D., Grosse, Y., Guha, N., Benbrahim-Tallaa, L., El Ghissassi, F., Scoccianti, C., Mattock, H., Straif, K., on behalf of the International Agency for Research on Cancer (IARC) Monograph Working Group (2015) Carcinogenicity of Tetrachlorvinphos, Parathion, Malathion, Diazinon and Glyphosate. *The* *Lancet Oncology* **16**, 490-491. *Role*: Member of IARC Monograph Working Group.

51. Mangum, L.C., Borazjani, A., Stokes, J.V., Matthews, A.T., Lee, J.H., Chambers, J.E., **Ross, M.K.** (2015) Organochlorine Insecticides Induce NADPH Oxidase-Dependent Reactive Oxygen Species in Human Monocytic Cells via Phospholipase A2/Arachidonic Acid. *Chem. Res. Toxicol.* **28**, 570-584.

50. Chiavaccini, L., Claude, A.K., Lee, J.H., **Ross, M.K.**, Meyer, R.E., Langston, V.C. (2015) Pharmacokinetics and pharmacodynamics comparison between subcutaneous and intravenous butorphanol administration in horses. *Journal of Veterinary Pharmacology and Experimental Therapeutics* **38**, 365-374.

49. **Ross, M.K.**, Borazjani, A., Mangum, L.C., Wang, R., Crow, J.A. (2014) Effects of Toxicologically Relevant Xenobiotics and the Lipid-Derived Electrophile 4-Hydroxynonenal on Macrophage Cholesterol Efflux: Silencing Carboxylesterase 1 Has Paradoxical Effects on Cholesterol Uptake and Efflux. *Chem. Res. Toxicol.* **27**, 1743-1756.

48. Ross, M.K., Matthews, A.T., Mangum, L.C. (2014) Chemical Atherogenesis: Role of Endogenous and Exogenous Poisons in Disease Development. *Toxics* 2, 17-34.

47. Claude, A.K., Miller W.W., Beyer, A.M., Willeford, K.O., **Ross, M.K.** (2014) Quantification and comparison of baseline cortisol levels between aqueous and plasma from healthy anesthetized hound dogs utilizing mass spectrometry. *Veterinary Ophthalmology* **17**, 57-62.

46. Haraschak J.L., Langston V.C., Wang R., Riggs C., Fellman C., **Ross M.K.**, Bulla C., Lunsford K., Mackin A., Archer T. (2014) Pharmacokinetic Evaluation of Oral Dantrolene in the Dog. *Journal of Veterinary Pharmacology and Experimental Therapeutics* **37**, 286-294.

45. Carr, R.L., Graves, C.A., Mangum, L.C., Nail, C.A., and **Ross, M.K.** (2014) Low Level Chlorpyrifos Exposure Increases Anandamide Accumulation in Juvenile Rat Brain in the Absence of Cholinesterase Inhibition. *Neurotoxicology* **43**, 82-89.

44. Wang, R., Borazjani, A., Matthews, A.T., Mangum, L.C., Edelmann, M.E., **Ross, M.K.** (2013) Identification of palmitoyl protein thioesterase 1 in human THP-1 monocytes/macrophages and characterization of unique biochemical activities for this enzyme. *Biochemistry* **52***,* 7559–7574.

43. Ammari, M.G., Pharr, G.T., **Ross, M.K.,** Pinchuk, G.V., Pinchuk L.M. (2013)Mitochondrial dysfunction associated with viral cytopathogenicity. *Current Topics in Virology* **11**, 19-30.

42. Lin, Z., Fisher,J.W., Wang, R., **Ross, M.K.**, Filipov, N.M. (2013) Estimation of placental and lactational transfer and tissue distribution of atrazine and its main metabolites in the rat dam, fetus, and neonate with physiologically based pharmacokinetic modeling. *Toxicol. Appl. Pharmacol.* **273**, 140-158.

41. Carr, R.L., Adams A.L., Kepler D.R., Ward A.B., and **Ross, M.K.** (2013) Induction of Endocannabinoid Levels in Juvenile Rat Brain Following Developmental Chlorpyrifos Exposure. *Toxicol. Sci*. **135**, [193-201](tel:160193201).

40. Alavanja, M.C.R., **Ross, M.K.**, Bonner, M.R. (2013) *Reply to*: Increased cancer burden among pesticide applicators and others due to pesticide exposure. *CA: A Cancer Journal for Clinicians*. **63**, 366-367.

39. Alavanja, M.C.R., **Ross, M.K.**, Bonner, M.R. (2013) Increased cancer burden among pesticide applicators and others due to pesticide exposure. *CA: A Cancer Journal for Clinicians*. **63**,120-142.

38. Figueiredo, A.S., García-Crescioni, H.J., Bulla, S.C., **Ross, M.K.**, McIntosh, C., Lunsford, K., Bulla, C. (2013) Cannabinoid suppression of vascular endothelial growth factor expression in a canine osteosarcoma cell line. *Veterinary Medicine: Research and Reports* **4,** 31-34.

37. Crow, J.A., Bittles, V., Borazjani,A., Potter, P.M., and **Ross, M.K.** (2012) Covalent Inhibition of Recombinant Human Carboxylesterase 1 and 2 and Monoacylglycerol Lipase by the Carbamates JZL184 and URB597. *Biochem. Pharmacol.* **84**, 1215-1222.

36. **Ross, M.K.**, Borazjani, A., Wang, R., Crow, J.A., Xie, S. (2012) Examination of the carboxylesterase phenotype in human liver. *Arch. Biochem. Biophys*. **522**, 44-56.

35. **Ross, M.K.** and Edelmann, M.J. (2012) Carboxylesterases: A Multifunctional Enzyme Involved in Pesticide and Lipid Metabolism. *American Chemical Society (ACS) Symposium Series*. In: Parameters for Pesticide QSAR and PBPK/PD Models, Chapter 10,149-164.

34. Meek E.C., ChambersH.W., CobanA., FunckK.E., Pringle R.B., **RossM.K.**, ChambersJ.E. (2012) Synthesis and *In Vitro* and *In Vivo* Inhibition Potencies of Highly Relevant Nerve Agent Surrogates. *Toxicol. Sci.* **126**, 525-533.

33. Crow J.A., Bittles V., Herring K.L., Borazjani A., Potter P.M., and **Ross M.K.** (2012) Inhibition of Recombinant Human Carboxylesterase 1 and 2 and Monoacylglycerol Lipase by Chlorpyrifos Oxon, Paraoxon and Methyl Paraoxon. *Toxicol. Appl. Pharmacol.* **258**, 145–150.

32. Lenarduzzi T., Langston C., and **Ross, M.K.** (2011) Pharmacokinetics of Clindamycin-HCl Administered Orally to Pigeons. *J. Avian Med. Surg.* **25**, 259-265.

31. Borazjani A., Edelmann M.J., HardinK.L., HerringK.L., CrowJ.A., and **RossM.K.** (2011) Catabolism of 4-Hydroxy-2-*trans*-Nonenal by THP1 Monocytes/Macrophages and Inactivation of Carboxylesterases by this Lipid Electrophile. *Chemico-Biol. Interact.* **194**, 1-12.

30. Carr R.L., Borazjani A., and **Ross M.K.** (2011) Effect of Developmental Chlorpyrifos Exposure on Endocannabinoid Metabolizing Enzymes in the Brain of Juvenile Rats. *Toxicol. Sci.* **122**, 112-120.

29. LinZ., Fisher J.W., **Ross M.K.**, Filipov N.M. (2011) A Physiologically Based Pharmacokinetic Model for Atrazine and its Main Metabolites in the Adult Male C57BL/6 Mouse. *Toxicol. Appl. Pharmacol.* **251**, 16-31.

28. Xie S., Borazjani A., Hatfield M.J., Edwards C.C., Potter P.M., and **Ross M.K.** (2010) Inactivation of lipid glyceryl ester metabolism in human THP1 monocytes/macrophages by activated organophosphorus insecticides: Role of carboxylesterase 1 and 2. *Chem. Res. Toxicol.* **23**, 1890-1904.

27. **Ross M.K.**, Streit T.M., Herring K.L., Xie S. (2010) Carboxylesterases: Dual roles in lipid and pesticide metabolism. *J. Pest. Sci.* **35**, 257-264.

***Publications as Assistant Professor at MSU (2004-2010; Pub. #’s: 12-26)*:**

26. Crow J.A., Herring K.L., Xie S., Borazjani A., Potter P.M., and **Ross M.K.** (2010) Inhibition of carboxylesterase activity of THP1 monocytes/macrophages and recombinant human carboxylesterase 1 by oxysterols and fatty acids. *Biochim. Biophys. Acta* (*Molecular and Cell Biology of Lipids*) **1801**, 31-41.

25. Coyne C., **Ross M.K.**, Bailey J. (2009) Dual potency of anti-HER2/neu and anti-EGFR anthracycline-immunoconjugates in chemotherapeutic-resistant mammary carcinoma combined with cyclosporine A and verapamil P-glycoprotein inhibition. *J. Drug Target.* **17,** 474-489.

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*\* Both authors contributed equally to this work.* (This manuscript was written in part while setting up my laboratory at MSU; the experimental work was completed while I was a postdoc)

***Publications from postdoctoral and graduate work (Pub. #’s: 1-11):***

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8. **Ross M.K.** and Pegram R.A. (2003) Glutathione transferase theta 1–1-dependent metabolism of the water disinfection byproduct bromodichloromethane. *Chem. Res. Toxicol.* **16**, 216-226.

7. **Ross M.K.** and Pegram R.A. (2003) [35S]-Labeling of the *Salmonella typhimurium* glutathione pool to assess glutathione-mediated DNA binding by 1,2-dibromoethane. *Chem-Biol. Interact.* **146**, 39-49.

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3. **Ross M.K.**, Mathison B.M., Said B., Shank R.C. (1999) 5-Methylcytosine in CpG sites and the reactivity of nearest neighboring guanines towards the carcinogen aflatoxin B1-8,9-epoxide. *Biochem. Biophys. Res. Com.* **254**, 114-119*.*

2. **Ross M.K.** (1998) DNA-damaging effects of genotoxins in mixture: Modulation of covalent binding to DNA. Ph.D. Dissertation. University of California at Irvine.

1. Said B., **Ross M.K.**, Salib T., Shank R.C. (1995) Modulation of DNA adduct formation by successive exposures of DNA to small and bulky chemical carcinogens. *Carcinogenesis* **16**, 3057-3062.

**BOOK CHAPTERS/MONOGRAPHS**

**Ross M.K.** and Carr, R.L. (2019) The Pyrethroid Insecticides (An Update). In: *Encyclopedia of Environmental Health (Second Edition)*,pp*.* 429-435 Elsevier Ltd., Oxford, UK, *Ed.* Jerome Nriagu. (Invited book chapter)*.* <https://doi.org/10.1016/B978-0-12-409548-9.11819-6>

**IARC (2016) IARC Monographs Programme: Pentachlorophenol and Some Related Compounds. Vol. 117. (**<http://monographs.iarc.fr/ENG/Monographs/vol117/index.php>**) – working group member**

**IARC (2015) IARC Monographs Programme: Some Organophosphate Insecticides and Herbicides: Diazinon, Glyphosate, Malathion, Parathion, and Tetrachlorvinphos. Vol. 112. (**<http://monographs.iarc.fr/ENG/Monographs/vol112/index.php>**) – working group member**

**Ross M.K.** (2011) The Pyrethroid Insecticides. In: *Encyclopedia of Environmental Health.*volume 4, pp. 702–708,Elsevier Ltd., Oxford, UK, *Ed.* Jerome Nriagu. (Invited book chapter)*.*

Chambers J.E., Meek E.C., **Ross M.K.** (2010) The Metabolic Activation and Detoxication of Anticholinesterase Insecticides. In: *Anticholinesterase Pesticides: Metabolism, Neurotoxicity, and Epidemiology*,chapter 6, pp. 77-84, Wiley, New York, *Ed.* Ramesh Gupta and Tetsuo Satoh. (Invited book chapter).

**Current Research Support (dollar amounts are total costs for project)**

## 

## **1R15HL157818-01A1 Ross (PI) 03/15/22-03/14/25 ($420,691)**

**Sponsor:** NIH/NHLBI

**Title:** Crosstalk between CES1 and PPARγ and LXRα

**Goals:** This grant seeks to obtain fundamental knowledge of the interactions that occur in immune cells between an enzyme – termed carboxylesterase 1 (CES1) – and nuclear receptors that bind to lipid molecules that are present in the microenvironment, thus regulating gene expression programs that affect inflammation resolution.

**Role:** Principal Investigator

[**1R15GM128206-01**](https://public.era.nih.gov/grantfolder/viewCommonsStatus.era?encryptedParam=(v2)ETMsDgAAAWJtI9B-ABRBRVMvQ0JDL1BLQ1M1UGFkZGluZwCAABAAEHi0hw_01xSMtY4Ek5-_xmQAAAAQuol92AVZBLdYLqnnqPZ5fQAUYAXLagh3iKd8tu2TIowXWLHNayQ.) **Ross (PI) 04/01/18-03/31/22 (NCE) ($420,691)**

**Sponsor:** NIH/NIGMS

**Title:** Role of Carboxylesterases in Innate Immunity

**Goals:** The major goals of this project are to understand how carboxylesterases catabolize pro- and anti-inflammatory lipids during acute inflammation induced by the endotoxin lipopolysaccharide.

**Role:** Principal Investigator

**U01 NS107127 Chambers (PI) 07/01/18-06/30/22 (NCE) ($1,300,000)**

**Sponsor:** NIH CounterACT

**Goals:** This project will develop novel oxime compounds that penetrate the central nervous system and be used to mitigate the adverse effects of nerve agents in humans.

**Role:** Co-Investigator (M.K. Ross)

**Responsibilities:** Establish analytical methods to quantify oxime drugs in rat blood and brain.Supervise the pharmacokinetic analyses of oxime drugs in animal models.

## **U01 NS123255 Chambers (PI) 08/01/21-07/31/26 ($3,582,738)**

**Sponsor:** NIH CounterACT

**Title:** [Optimization of Substituted Phenoxyalkyl Pyridinium Oximes as Therapies for Organophosphate](https://reporter.nih.gov/search/Q5TFOkdWt0Gwl_Q2TGIbAg/project-details/10281742) [Poisoning](https://reporter.nih.gov/search/Q5TFOkdWt0Gwl_Q2TGIbAg/project-details/10281742)

**Goals:** To optimize the identified experimental oxime antidotes for efficacy and pharmacokinetics in multiple animal species (rats, guinea pigs, and minipigs).

**Role:** Co-investigator (M.K. Ross)

**Responsibilities:** Establish analytical methods to quantify oximes in blood and brain of these experimental animal models. Supervise the analyses of the oxime drugs.

**1R21NS108954-01 Chambers (PI) 09/30/18-08/3/21 (NCE) ($394,764)**

**Sponsor:** NIH/NINDS

**Goals:** This project will examine the metabolism and PK behavior of the organophosphorus compound phorate in animal models and human tissues.

**Role:** Co-Investigator (M.K. Ross)

**Responsibilities:** Establish analytical methods to quantify phorate and its metabolites in rodent and human subcellular fractions and whole tissues.Supervise the pharmacokinetic analyses of phorate in a rat model.

**P20GM1036 Pruett (PI) 10/01/18-09/30/23 ($10.5 MIL)**

NIH/NIGMS

Center of Biomedical Research Excellence in Pathogen-Host Interactions

**Role:** Consultant (M.K. Ross) in the *Metabolomics* core

The major goal of this project is to develop a successful cohort of junior investigators that study pathogen-host interactions. My role will be to assist junior faculty who wish to analyze small molecules in the *Metabolomics* core.

**pending Research Support**

### **1R01 ES030700-01 Ross (PI) 10/01/19-09/30/23 ($1,450,000)**

NIH/NIEHS (new submission, currently pending review)

Pesticides and atherosclerosis: Role of CES1

The major goal of this project is to evaluate whether an organophosphorus insecticide (chlorpyrifos) can induce disease in atherosclerotic-susceptible low-density lipoprotein (LDL) receptor deficient mice that express human CES1 in its macrophages.

**1R15HL157818-01A1 Ross (PI)**

Research grant submitted to NIH, 25 Feb 2021; application received a score of 20 and is pending council review in October 2021.

**1S10OD030297-01 Ross (PI)**

Equipment grant submitted to NIH, 1 June 2020; application not scored

**completed Research Support**

**1R15GM116129-01 Crow (PI) 07/01/15-06/30/19 ($425,457)**

**Sponsor:** NIH/NIGMS

**Title:** Discovery of endogenous pro-ligands regulated by CES1

**Goals:** To characterize the endogenous substrates for CES1 that act as pro-ligands for the lipid sensor/nuclear receptor PPAR gamma.

**Role:** Co-Investigator (M.K. Ross)

**Responsibilities:** Management of aim 2 and parts of aims 1 and 3, design and perform experiments, help to write annual reports, and perform manuscript writing.

**1R15ES023162-01A1 Carr (PI) 12/01/14-11/30/18 ($426,959)**

**Sponsor:** NIH/NIEHS

**Title:** Disruption of the Endocannbinoid System as a Target in Developmental OP Toxicity

**Goals:** This project examines the endocannabinoid system as a target of developmental OP toxicity.

**Role:** Co-Investigator (M.K. Ross)

**Responsibilities:** LC-MS/MS metabolipidomic analysis of 2-arachidonoylglycerol, anandamide and other bioactive lipids in brain.

**Mississippi Food Safety Initiative Ross (PI) 05/01/14-06/30/17 ($40,000)**

**Sponsor: USDA**

**Title:** Targeting the Endocannabinoid System to Enhance Immunity

**Goals:** The goal of this project will be the identification of serine hydrolases in macrophages that can be targeted (i.e. inhibited) by small molecules for the purpose of enhancing endocannabinoid levels during microbial infection, and whether the microbicidal activity of the macrophages is concomitantly enhanced.

**Role:** Principal Investigator

**Responsibilities:** Overall management of project, design and perform experiments, write annual reports, and manuscript writing.

**1R15ES015348-02 Ross (PI) 02/08/12-01/31/17 ($425,457)**

**Sponsor: NIH**

**Title:** Lipid Glyceryl Ester Homeostasis in Macrophages and Perturbation by Environmental Toxicants

**Goals:** This grant renewal project examines the mechanisms by which endogenous toxins (oxidized low density lipoproteins) and exogenous toxicants (pesticides) can together dysregulate the endocannabinoid system in macrophages, thus enhancing foam cell development.

**Role:** Principal Investigator

**Responsibilities:** Overall management of project, design and perform experiments, write annual reports, and manuscript writing.

**D15CA-805 Thomason (PI) 08/01/14-07/31/15 ($10,697)**

**Sponsor:** Morris Animal Foundation

**Title:** Effects of Leukoreduction on Eicosanoid Biosynthesis in Stored Canine Packed Red Blood Cells.

**Goals:** This project examines whether storage of canine packed red cells leads to the increased production of bioactive eicosanoids.

**Role:** Co-Investigator (M.K. Ross)

**Responsibilities:** Oversee the analysis of eicosanoids by LC-MS/MS.

**F31** **HL122082-02 Matthews (PI) 08/15/14-08/14/16 (stipend, lab funds)**

**Sponsor:** NIH

**Title:** Role of endocannabinoids in atherosclerosis.

**Goals:** This is a pre-doctoral fellowship to study whether endocannabinoid biosynthesis is enhanced following ligation of the macrophage scavenger receptor CD36 by oxidized low-density lipoprotein as part of a compensatory mechanism to counteract inflammation and oxidative stress. Specifically, this project will determine whether diacylglycerol lipase β (DAGLβ), the rate-limiting biosynthetic enzyme of 2-AG, is activated via transduction of Nox-derived reactive oxygen species.

**Role:** Co-Mentors (M.K. Ross; Stephen Pruett)

**Responsibilities:** Oversee the training and mentorship of PhD student Anberitha Matthews

**Grant: EPA Star Grant (G2009-STAR-B1) J.E. Chambers (PI) 6/1/10-5/31/16 ($500,000)**

**Sponsor:** EPA

**Title:** New Environmental Public Health Indicator Linking Organochlorine Compounds and Type 2 Diabetes

**Role:** Co-Investigator (M.K. Ross)

**Goals:** The goal of this project is to characterize novel biomarkers for the development of type 2 diabetes in humans. My role is to quantify urinary isoprostanes, a biomarker of oxidative stress, by LC-MS/MS.

**Borlaug Fellowship for visiting scholar from Vietnam** (**PI: Dinh,** Animal and Dairy Sciences, MSU**)**

Role: co-Mentor ($10,000 to M.K. Ross for LC-MS/MS analysis) – duration: 8/15/15-12/1/15

**Grant: NIH 1R15ES015348-01A1** **M.K. Ross (PI)**  **8/1/07-7/31/11 ($214,500)**

Title: Effect of Organophosphate Exposure on Cholesteryl Ester Hydrolase

Role: Principal Investigator

Description: These studies will determine if bioactive metabolites (oxons) of three environmentally relevant organophosphate insecticides can interfere with cholesterol metabolism in cultured human macrophage foam cells.

**Grant: NIH R15 ES015348-01A1S1** (Competitive supplement) **M.K. Ross (PI)** **9/25/09-7/31/10 ($67,200)**

Title: Effect of Organophosphate Exposure on Cholesteryl Ester Hydrolase

Role:Principal Investigator

Description: It will be determined if the endocannabinoid tone of vessel wall macrophages can be significantly perturbed by chronic exposure to bioactive OP metabolites, thus resulting in an activated endocannabinoid system that modulates cholesterol metabolism in macrophages.

**Grant: NIH 1R15ES015348-01A1S2** (Admin. supplement) **M.K. Ross (PI) 9/3/09-7/31/11 ($71,500)**

Title: Effect of Organophosphate Exposure on Cholesteryl Ester Hydrolase

Role:Principal Investigator

Description: This administrative supplement will extend the aims of our parent grant to study the effects of organophosphate (OP) pesticides on other genes and proteins besides CES1 that participate in cholesterol metabolism. The effects of OP pesticides on the abundance and activities of these proteins in cholesterol-loaded human THP1 macrophages using RT-PCR, western blotting, and functional assays (e.g., cholesterol efflux and cholesterol mass determination) will be examined.

**Grant: NIH R21ES015107-01** **J.E. Chambers (PI)** **9/22/06-8/31/11 ($628,986)**

Title: Relationship of Blood Esterases, Pesticide Exposure and Cardiovascular Disease

Role: Co-Principal Investigator (**M.K. Ross**)

Description: The goal of this project is to solidify an interdisciplinary team of basic and clinical researchers in the Center for Environmental Health Sciences at Mississippi State University for research into the environmental factors contributing to the higher mortality of cardiovascular disease in the Deep South and among African-Americans, and to position this team for participation in larger-scale on-going multi-institutional epidemiological studies.

**Grant: R21ES015107** (Admin. supplement) **J.E. Chambers (PI)** **6/1/09-5/31/11 ($247,640)**

Title: Relationship of Blood Esterases, Pesticide Exposure and Cardiovascular Disease

Role: Co-Principal Investigator (**M.K. Ross**)

Description: The current grant investigates several risk factors for CVD in African American and Caucasian southerners. This supplement will allow 2 additional risk factors (the presence of type 2 diabetes and of legacy organochlorine pesticides) to be investigated in the cohort’s blood samples.

**Grant: Basic Sciences/CVM/MSU Internal Grant (competitive) M.K. Ross (PI) 7/1/09-6/30/10 ($13,000)**

Title: Knockdown of Carboxylesterases (CEs) by Chemical Inhibitors: Uncovering Endogenous Substrates for CEs

Role: Principal Investigator (**M.K. Ross**)

Description: The goal of this study is to use small-molecule inhibitors of carboxylesterases (CEs) to study their physiologic function in mice and to identify endogenous substrates of this hydrolytic enzyme.

**Grant: NIH/NCRR P20RR017661 (COBRE, Project 5) J.E. Chambers (PI) 1/1/04-6/30/08 ($351,125)**

Grant Title: Pesticide Toxicity to the Nervous and Endocrine Systems

Role: Principal Investigator of Project 5, “Biotransformation and Pharmacokinetics of Pyrethroid Insecticides”. (**M.K. Ross**) This project investigated the kinetics of pyrethroid detoxication by human carboxylesterase and cytochrome P450 enzymes.

Description: This is a Center of Biomedical Research Excellence grant to promote junior faculty competitiveness and to create a competitive research center. Project 5 was one of five projects led by junior investigators.

**Grant: NIH/NCRR P20RR017661 (COBRE, Pilot Project) J.E. Chambers (PI) 10/1/05-6/30/07 ($16,965)**

Pilot Project Title: Kinetic Analyses of Site-Specific Mutants of Carboxylesterases

Role: Principal Investigator of Pilot Project.

Description: This pilot study investigated the function of specific amino acid residues located in the side-door domain of a model carboxylesterase protein (pnb CE).

**Grant: NIH/NCRR P20RR017661 (COBRE, Pilot Project) J.E. Chambers (PI) 10/1/05-6/30/07 ($20,000)**

Pilot Project Title: Effects of Prior or Concurrent Dieldrin Exposure on the Tissue Distribution and Pharmacokinetics of Atrazine in Mice: A Preliminary Study

Role: Co-Principal Investigator of Pilot Project; Nick Filipov, Principal Investigator

Description: This pilot study investigated the pharmacokinetics of the herbicide atrazine in mice. Tissue, blood, and urine levels of atrazine and its major metabolites were determined by LC-MS analysis.

**Grant: USDA/CSREES M.K. Ross (PI) 6/1/06-5/31/09 ($5,000/year)**

Title: Biotransformation and Pharmacokinetics of Pyrethroid Insecticides

Role: Principal Investigator

Description: This project investigated the metabolism of pyrethroids and the regulation of the detoxication enzymes in liver cells.

**Grant: MSU-Research Initiation Proposal (competitive) M.K. Ross (PI) 1/1/05-12/31/05 ($10,000)**

Title: Induction of Detoxification Enzymes in Liver Cells Resulting from Toxicant Exposure

Role: Principal Investigator

Description: This project investigated whether pyrethroids could induce cytochrome P450 and carboxylesterase enzymes in human liver cells.

***A complete list of grants submitted but not funded (as PI or co-I) is given in Appendix 1.***

**PRESENTATIONS** *(Invited talks as faculty member)*

Dual Roles of Carboxylesterases in Xenobiotic and Lipid Metabolism. Matt K. Ross. Invited talk, *Nanjing Agricultural University, Nanjing, China. June, 2015*

Targeting the Endocannabinoid System to Enhance Immunity. Matt K. Ross. Invited talk, *Jiangsu Academy of Agricultural Sciences (JAAS), Nanjing, China. June, 2015.*

Tips to Get Your Science Published in Peer-reviewed English Language Journals*.* Matt K. Ross, 7 lectures given at the Jiangsu Academy of Agricultural Sciences (JAAS), Nanjing, China. June, 2015.

Targeting the Endocannabinoid System to Enhance Immunity. Matt K. Ross. Invited talk, *Food Safety* *Conference,* Mississippi State University. May 12, 2015.

USING activity-based Protein probes to investigate serine hydrolases in cells. Matt K. Ross. Presented small workshop at the *Laboratory of Food Safety* at Jiangsu Academy of Agricultural Sciences (JAAS), Nanjing, China. November, 2013.

carboxylesterases: A MULTIFUNCTIONAL ENZYME INVOLVED in LIPID and PESTICIDE metabolism. Matt K. Ross. Invited talk at the South East Lipid Research Conference (SELRC), Callaway Gardens, Pine Mountain, GA, September 27-29, 2012.

Carboxylesterases: A Multifunctional Enzyme Involved in Pesticide and Lipid Metabolism. Matt K. Ross. Invited talk at the *Institute of Food Safety* at Jiangsu Academy of Agricultural Sciences (JAAS), Nanjing, China. July, 2012.

Carboxylesterases: A Multifunctional Enzyme Involved in Pesticide and Lipid Metabolism. Matt K. Ross. Invited talk at Idaho State University, College of Pharmacy. May, 2012.

carboxylesterases: Dual Roles in LIPID and PESTICIDE metabolism. Matt K. Ross. Invited talk at the American Chemical Society (ACS) National Meeting, Denver, August, 2011.

HUman carboxylesterases and their role in xenobiotic and endobiotic metabolism. Matt K. Ross. Invited talk at the Randy Rose Memorial Symposium, Dept. of Environmental and Molecular Toxicology, North Carolina State University, March, 2007.

Human Carboxylesterases and Biotransformation of Pyrethroids. Matt K. Ross. Invited talk at the American Chemical Society (ACS) National Meeting, Washington D.C., August, 2005.

Human Carboxylesterases and their Role in Pyrethroid Metabolism. Matt K. Ross. Invited talk at the Mississippi State University COBRE Symposium, September 2005.

Biotransformation of Pesticides by Rodent and Human Enzymes. Matt K. Ross. Invited seminar at the Mississippi State University Department of Biochemistry, Fall Seminar Series. November 17, 2004.

**MEETING abstracts** *(poster or ORAl presentations)*

***Abstracts from work since joining MSU in 2004:***

Oluwabori Adekanye, Maggie Phillips, Abdolsamad Borazjani, and **Matthew K. Ross**. *Carboxylesterase 1 (CES1) regulates arachidonic acid-containing triacylglycerol levels in macrophages and shapes their immunophenotype*. Abstract presented at the American Society of Biochemistry and Molecular Biology (ASBMB) meeting (Seattle, WA) – poster format (March, 2023).  
  
Oluwabori Adekanye, Maggie Phillips, Abdolsamad Borazjani, and **Matthew K. Ross**. *Carboxylesterase 1 (CES1) regulates arachidonic acid-containing triacylglycerol levels in macrophages and shapes their immunophenotype*. Abstract presented at the Mississippi Academy of Sciences (Biloxi, MS) – poster format (Feb, 2023).

Nikolay Filipov, Ryan Mote, Ignacio Llada, **Matthew Ross**, Nicholas Hill, Jeferson Lourenco, Dean Jones, Garret Suen. Rumen dynamics of volatile fatty acids and Epichloë coenophiala-produced ergovaline in steers grazing on tall fescue. 2023 Conference of Research Workers in Animal Diseases (CRWAD). January, 2023. Chicago, IL.

Matt K. Ross\*, Maggie Phillips, Abdolsamad Borazjani. Carboxylesterase 1 (CES1) Releases Oxylipins from Oxidized Triacylglycerols: Examination of its Substrate Selectivity.

Experimental Biology meeting. April, 2022. Philadelphia, PA.

### C. Price, **M. Ross**, B. Backer, and J. Chambers. Analysis of Regulatory Inflammation Oxylipins and Arachidonic Acid following Acute Sarin Surrogate Exposure and Novel Oxime Therapy in Rats. Society of Toxicology meeting. March, 2022. San Diego, CA.

M. Phillips, A. Borazjani, **M.K. Ross**. Carboxylesterase 1 Releases Oxylipins from Oxidized Triacylglycerols: An Initial Examination of its Substrate Selectivity. South Central Regional Chapter Annual Meeting. November 2021. (Virtual)

Szafran B, Borazjani A, Carr R, **Ross M**, and Kaplan BLF. Tipping the Lung Immune Balance. Mississippi State University 3-Minute Thesis Competition. Starkville, MS. November 2020. (Virtual)

Szafran B, Borazjani A, Carr R, **Ross M**, and Kaplan BLF. Immune Effects of Carboxylesterase Inactivation in the Neonatal Murine Lung. Society of Toxicology South Central Regional Chapter Annual Meeting. Starkville, MS. November 2020. (Virtual)

Borazjani, H. Scheaffer, B. Szafran, and **M.K. Ross**. Blockade of Prostaglandin D2 Glyceryl Ester Catabolism Using Carboxylesterase 1 Inhibitors Enhances the Anti-inflammatory Effects of this Lipid Mediator. Presented at the American Chemical Society fall national meeting, San Diego, CA. August 25-29, 2019.

Kaplan BLF, Szafran BN, Lee JH, Hou X, Borazjani A, Andrzejewski K, and **Ross MK**. Characterization of Endocannabionid Metabolizing Enzymes in Human Peripheral Blood Mononuclear Cells Under Inflammatory Conditions. 28th Annual International Cannabinoid Research Society Meeting, Leiden, the Netherlands. July 2018.

Szafran B, Borazjani A, Carr RL, **Ross MK**, and Kaplan BLF. Effects of Low-Level Chlorpyrifos Exposure on Endocannabinoid Metabolism and Immune Function. Society of Toxicology Annual Meeting. San Antonio, TX. *The Toxicologist* 162 #2246. Presented at the *Society of Toxicology* meeting, San Antonio, TX, March 2018.

Szafran B, Lee JW, Hou X, Borazjani A, Kaplan BLF, Andrzejewski K, and **Ross MK**. Characterization of IL-6 Levels and Endocannabinoid Metabolizing Enzymes in Human Peripheral Blood Mononuclear Cells. 1st Veterinary Scholars Training Program Colloquium at NIH. Washington DC. August 2017.

Szafran B, Nichols J, Ross M, Kaplan BLF and Morgan T. Safety of Chronically Inhaled Vegetable Glycerin in Mice. Mississippi Academy of Sciences Meeting. Stoneville, MS. July 2017.

Characterization of IL-6 Levels and Endocannabinoid Metabolizing Enzyme Activity in Mouse and Human Lymphocytes under Conditions of Inflammation. B. Szafran, J. H. Lee, X. Hou, A. Borazjani, M.K. Ross, K. Andrzejewski, and B. Kaplan. Presented at the *Society of Toxicology* meeting, Baltimore, MD, March 12-16, 2017.

Andrzejewski KL, Szafran B, Lee JH, Hou X, Borazjani A, Ross M, Biglan K, KaplanB. A pilot study of the interaction of a biomarker of inflammation and the endocannabinoid system in Huntington’s disease (*Neurotherapeutics* 2017 14(1):227-251), *Huntington Study Group Meeting*, Nashville, TN, November, 2016.

M.K. Ross, L.C. Mangum, J.H. Lee, X. Hou, A. Borazjani, and J.A. Crow.*Chemical Biology and Toxicology of Human Carboxylesterase 1 in Macrophages*. Presented at the *American Chemical Society* fall national meeting, Philadelphia, PA. August 21-25, 2016.

J.H. Lee, A. Borazjani, E. Kummari, M.J. Edelmann, and M.K. Ross. *Targeting the Endocannabinoid System to Enhance Innate Immunity Using Chemoproteomics.* Presented at the *American Society for Mass Spectrometry* meeting*,* San Antonio, TX.June 7-10, 2016.

E.C. Meek, J.A. Crow, L.H. Mangum, M.K. Ross, R.W. Wills, and J.E. Chambers. *Serum levels of the organochlorine (OC) compound DDE and its possible association with type 2 diabetes (T2D) in Mississippians*. Presented at the *Society of Toxicology* meeting, New Orleans, LA, March 13-17, 2016.

S. Kondakala, C. Mulligan, J.H. Lee, M.K. Ross, and G.E. Howell. *Role of the hepatic endocannabinoid system in chlorpyrifos-induced lipid accumulation in McArdle-RH7777 cells*. Presented at the *Society of Toxicology* meeting, New Orleans, LA, March 13-17, 2016.

E. Kummari, J. H. Lee, A. Borazjani, M. Edelmann, and M.K. Ross. *Characterization of Serine Hydrolases Using Chemoproteomic Profiling Approach in Chicken Macrophages with Salmonella Infection.* Presented at the *American Society of Microbiology* meeting, New Orleans, LA. May 30-June 2, 2015.

Evangel Kummari, Navatha Alugubelly, Jung Hwa Lee, Lauren Mangum, Abdolsamad Borazjani, Matthew K. Ross, and Mariola J. Edelmann. *Characterization of prostaglandins released from human macrophages infected with enteric bacteria.* Presented at the *Southeast Institute of Metabolomics*, University of Florida, Gainsville, May 13-14, 2015.

A.T. Matthews, A.Borazjani, L.C. Mangum and M.K. Ross. ENHANCED oxidative stress MODULATES endocannabinoid tone. 2015 *University of Alabama, Birmingham Cardiovascular Symposium*.

A.T. Matthews, A.Borazjani, L.C. Mangum and M.K. Ross. ENHANCED oxidative stress MODULATES endocannabinoid tone. 2015 *Experimental Biology* meeting, Boston, MA.

L.C. Mangum, J.A. Crow, A. Borazjani, and M.K. Ross. Cholesterol Homeostasis is Regulated by Carboxylesterase 1 in Macrophage Foam Cells. 2015 Society of Toxicology meeting, San Diego, CA.

B.F. Kaplan, B. Szafran, A. Borazjani, J.H. Lee and M.K. Ross. LPS Suppresses Spleen Serine Hydrolase Activity and 2-Arachidonylglycerol (2-AG) Hydrolysis: A Possible Mechanism to Regulate Inflammation. 2015 Society of Toxicology meeting, San Diego, CA.

L. Mangum, G. Howell, M.K. Ross, S. Pruett, J. Chambers, J. Stokes. p,p’-DDE Alters Macrophage Reactivity *In Vitro*and Induces Monocyte/Macrophage Recruitment to the Stromal Vascular Fraction (SVF) of Adipose Tissue in C57Bl/6 Male Mice. 2015 Society of Toxicology meeting, San Diego, CA.

A.T. Matthews, A.Borazjani, R. Wang and M.K. Ross. Increased oxidative stress enhances endocannabinoid tone. 2014 *Experimental Biology* meeting, San Diego, CA.

L.C. Mangum,A. Borazjani, J.A. Crow, and M.K. Ross. Bioactive lipid metabolism by carboxylesterase 1 (CES1) in macrophages.2014 *Experimental Biology* meeting, San Diego, CA.

Matthews A.T., Borazjani A., Wang R., and Ross, M.K. Enhancing 2-Arachidonyl-glycerol Biosynthesis via Oxidative Stress. 2013 Annual Sigma Xi Meeting, November, Research Triangle Park, NC.

Ammari M., Pharr T., Ross M.K., Pinchuk G., Pinchuk, L. MITOCHONDRIAL DYSFUNCTION ASSOCIATED WITH BOVINE VIRAL DIARRHEA VIRUS CYTOPATHOGENICITY. 2013 10th International Veterinary Immunology Symposium, Milan, Italy, Aug 28-Sept 1.

L.C. Mangum, J.E. Chambers, and M.K. Ross. ACTIVATION OF HUMAN MONOCYTIC NADPH OXIDASE BY CHLORINATED CYCLODIENE INSECTICIDES. 2013 Society of Toxicology meeting, San Antonio, TX.

Carr, R.C., Adams A.L., Kepler D.R., Ward A.B., and Ross, M.K. Induction of Endocannabinoid Levels in Juvenile Rat Brain Following Developmental Chlorpyrifos Exposure. 2013 Society of Toxicology meeting, San Antonio, TX.

Lin, Z., Fisher,J.W., Wang, R., Ross, M.K., Filipov, N.M. Estimation of placental and lactational transfer and tissue distribution of atrazine and its main metabolites in the rat dam, fetus, and neonate with physiologically based pharmacokinetic modeling. 2013 Society of Toxicology meeting, San Antonio, TX.

Cummings T., Bennett L., and Ross M.K. ALBENDAZOLE TISSUE DEPLETION STUDY IN CHICKENS. 2012 American Veterinary Medical Association (AVMA) national meeting, San Diego, CA.

Borazjani A., Crow J.A., Wang R., and Ross M.K. MACROPHAGES AND TOXICANTS: EFFECTS ON CHOLESTEROL EFFLUX. 2012 Society of Toxicology meeting, San Francisco, CA. *The Toxicologist* **111** (S1): Abstract # 1518.

Carr R.L., Adams A.L., Kepler D.R., Ward A.B., and Ross M.K. PATTERN OF INHIBITION OF BRAIN ENDOCANNABINOID METABOLIZING ENZYMES FOLLOWING DEVELOPMENTAL CHLORPYRIFOS EXPOSURE. 2012 Society of Toxicology meeting, San Francisco, CA. *The Toxicologist* **111** (S1): Abstract # 2565.

Carr R.L., Ward A.B., and Ross M.K. REPEATED DEVELOPMENTAL CHLORPYRIFOS EXPOSURE INCREASES ENDOCANNABINOID LEVELS IN THE BRAIN OF JUVENILE RATS. 2011 Society of Toxicology meeting, Washington, DC. *The Toxicologist* **110** (S1): Abstract # 1325.

Ross M.K., Borazjani A., and Potter P.M. INACTIVATION OF ENDOCANNABINOID METABOLISM IN HUMAN THP1 MACROPHAGES FOLLOWING EXPOSURE TO ACTIVATED ORGANOPHOSPHOTHIONATES. 2011 Society of Toxicology meeting, Washington, DC. *The Toxicologist* **110** (S1): Abstract # 2086.

Crow J.A., Bittles V., Herrring K., Borazjani A., Potter P.M., and Ross M.K. STUDY OF THE INHIBITION OF RECOMBINANT HUMAN CARBOXYLESTERASE 1 AND 2 BY CHLORPYRIFOS OXON, PARAOXON, AND METHYL PARAOXON. 2011 Society of Toxicology meeting, Washington, DC. *The Toxicologist* **110** (S1): Abstract # 2098.

Sachidananda Mishra, Deepak R. Mishra, Craig Tucker, Matthew K. Ross A Quasi*-*Analytical Algorithm to Quantify Phycocyanin Concentration in Cyanobacterial Algal Blooms. 2011 Northern Gulf Institute Annual Conference.

Ross M.K., Borazjani A., Potter P.M., and Xie S. Metabolism of prostaglandin glyceryl esters by human carboxylesterases, CES1 and CES2, and its inhibition by bioactive metabolites of organophosphate insecticides. Poster abstract C122 966.10. *Experimental Biology* meeting, Anaheim, CA, April 24-28, 2010.

Carr R.L. and Ross M.K. Effect of developmental chlorpyrifos exposure on endocannabinoid metabolizing enzymes in the brain of juvenile rats. 2010 Society of Toxicology meeting, Salt Lake City, UT. *The Toxicologist* **109** (S1): Abstract # 168.

Ross M.K., K. Herring, S. Xie, P.M. Potter, and J.A. Crow. INHIBITORY EFFECTs OF OXYSTEROLS AND SATURATED AND UNSATURATED FATTY ACIDS ON HUMAN CARBOXYLESTERASE 1 and THP1 MONOCYTE/MACROPHAGE HYDROLYTIC ACTIVITYES. 2009 Society of Toxicology meeting, Baltimore, MD. *The Toxicologist* **108** (S1): Abstract # 905.

Ross M.K., A. Borazjani, S. Xie, and P.M. Potter. From xenobiotics to endobiotics: Efficient hydrolysis of the endocannabinoid 2-arachidonoylglycerol by human carboxylesterases 1 and 2. 2008 Society of Toxicology meeting, Seattle, WA. *The Toxicologist* **102** (S1): Abstract # 301.

Crow J.A., K. Hardin, A. Borazjani, and M.K. Ross. EFFECT OF THE LIPID PEROXIDIATION PRODUCT 4-HYDROXY-2-NONENAL ON ESTERASE AND LIPASE ACTIVITIES IN HUMAN THP-1 MONOCYTES/MACROPHAGES. 2008 Society of Toxicology meeting, Seattle, WA. *The Toxicologist* **102** (S1): Abstract # 2053.

Davis M.K., M. Russak, M.K. Ross, and J.E. Chambers. ASSESSING POTENTIAL EXPOSURE TO TRANSFERABLE INSECTICIDE RESIDUES FROM THE FUR OF DOGS TREATED WITH A SPOT-ON FLEA CONTROL PRODUCT CONTAINING THE PYRETHROID INSECTIDIE PERMETHRIN. 2008 Society of Toxicology meeting, Seattle, WA. *The Toxicologist* **102** (S1): Abstract # 1481.

Filipov N.M., M.K. Ross, L.M. Pinchuk, A. Borazjani and A. Coban. METABOLISM AND HEALTH EFFECTS OF ATRAZINE EXPOSURE IN THE MOUSE. 2008 Society of Toxicology meeting, Seattle, WA. *The Toxicologist* **102** (S1): Abstract # 1985.

Godin S.J., M.F. Hughes, M.K. Ross and M.J. DeVito. METABOLISM OF PYRETHROID PESTICIDES BY RAT AND HUMAN CYP450S AND SERUM. 2007 Society of Toxicology meeting, Charlotte, NC. *The Toxicologist* **96** (S1): Abstract # 1980.

Streit T.M., A. Borazjani, S.E. Lentz and M.K. Ross. EXAMINATION OF THE PROPOSED “SIDE DOOR” IN THE XENOBIOTIC METABOLIZING ENZYME CARBOXYLESTEARASE.2007 Society of Toxicology meeting, Charlotte, NC. *The Toxicologist* **96** (S1): Abstract # 349.  
  
Ross M.K., A. Borazjani, J.A. Crow, and M.P. Patricelli. Evaluation of the Carboxylesterase Phenotype in Human Liver. 2007 Society of Toxicology meeting, Charlotte, NC. *The Toxicologist* **96** (S1): Abstract # 350.

Filipov N. M., T.L. Jones, and M.K. Ross. Pharmacokinetics and tissue distribution of atrazine in male C57BL/6 mice. 2007 Society of Toxicology meeting, Charlotte, NC.  *The Toxicologist* **96** (S1): Abstract # 2034.

Crow J.A., B.L. Middleton, and M.K. Ross. INHIBITION OF CHOLESTERYL ESTER HYDROLASE IN THP-1 CELLS BY ORGANOPHOSPHORUS OXONS. 2007 Society of Toxicology meeting, Charlotte, NC. *The Toxicologist* **96** (S1): Abstract # 2121.

Streit T.M., A. Borazjani, S.E. Lentz and M.K. Ross. EXAMINATION OF THE “SIDE DOOR” IN THE XENOBIOTIC METABOLIZING ENZYME CARBOXYLESTEARASE. 2006SouthCentral Regional meeting of the Society of Toxicology, Monroe, LA.

Ross M.K., A. Borazjani, P.M. Potter, and T. Streit. METABOLISM OF PYRETHROIDS BY HUMAN CARBOXYLESTERASES. 2006 ISSX meeting, Puerto Rico.

Ross M.K., A. Borazjani, P.M. Potter, and T. Streit. METABOLISM OF PYRETHROIDS BY HUMAN CARBOXYLESTERASES. 2006 COBRE/INBRE symposium, Washington, DC. This was a “highlighted poster” at the meeting.

Ross M.K., S.E. Lentz, and A. Borazjani. Characterization of Two Rat Carboxylesterases Involved in Pyrethroid Metabolism. 2006 Society of Toxicology meeting, San Diego, CA. *The Toxicologist* **90** (S1): Abstract # 694.

Davis M.K., M. Russak, J.W. Tyler, J.S. Boone, M.K. Ross, and J.E. Chambers. ASSESSING EXPOSURE LEVELS OF CHILDREN TO FLEA CONTROL INSECTICIDES (CHLORPYRIFOS, TETRACHLORVINPHOS, AND PERMETHRIN) FROM THE FUR OF DOGS. 2006 Society of Toxicology meeting, San Diego, CA. *The Toxicologist* **90** (S1): Abstract # 862.

Godin S.J., M.F. Hughes, M.J. DeVito, and M.K. Ross. SPECIES DIFFERENCES IN THE METABOLISM OF PYRETHROID PESTICIDES IN RAT AND HUMAN LIVER MICROSOMES. 2006 Society of Toxicology meeting, San Diego, CA. *The Toxicologist* **90** (S1): Abstract # 1202.

Dail M., S. Burgess, M.K. Ross, and J. Chambers. EFFECTS OF DIELDRIN AND PHENOBARBITAL ON THE LEVELS OF MESSENGER RNA OF TOXICOLOGICALLY IMPORTANT GENES. 2006 Society of Toxicology meeting, San Diego, CA. *The Toxicologist* **90** (S1): Abstract # 1825.

Ross M.K., S.E. Lentz, and A. Borazjani. Characterization of Two Rat Carboxylesterases Involved in Pyrethroid Metabolism. 2005 South Central Chapter Regional meeting of the Society of Toxicology, Little Rock, AR.

Ross M.K., P.M. Potter, and A. Borazjani. Hydrolytic Metabolism of Pyrethroids by Human Carboxylesterases and Rodent and Human Liver Microsomes. 2005 Society of Toxicology meeting, New Orleans, LA. *The Toxicologist* **84** (S1): Abstract # 1569.

Ross, M.K., Potter, P.M., and Borazjani, A. Hydrolytic Metabolism of Pyrethroids by Human Carboxylesterases and Rodent and Human Liver Microsomes. 2004 South Central Chapter Regional meeting of Society of Toxicology, Mississippi State University.

***Abstracts from postdoctoral and graduate research work:***

Ross M.K., R. Tornero-Velez, C. Granville, A. Gold, K. Funasaka, M.V. Evans, and D.M. DeMarini. Metabolism and Bioactivation of 1,1- and 1,3-Dichloropropene. 2004 International Society for the Study of Xenobiotics (ISSX) meeting, Vancouver, BC.

Ross M.K., C.R. Eklund, and R.A. Pegram. Comparison of Detoxification and Bioactivation Pathways for Bromodichloromethane in the Rat. 2004 Society of Toxicology meeting, Baltimore, MD. *The Toxicologist*: Abstract # 1452.

Pegram, R.A., M.K. Ross, T.L. Leavens, J.W. Allis, B.C. Blount, and G. Zhao. Bromodichloromethane toxicokinetics: Linking exposure to effect. Presented at the 2002 U.S.EPA Science Fair, May 1-2, Washington, D.C.

Ross M.K. and R.A. Pegram. Comparison of rates of glutathione (GSH)-conjugation of trihalomethanes. 2002 Society of Toxicology meeting, Nashville, TN. *The Toxicologist*, *Abstract #* *1118*.

Ross M.K. and R.A. Pegram. Glutathione (GSH)-dependent metabolism of the disinfection-by-product bromodichloromethane (BDCM). 2001 International Society for the Study of Xenobiotics (ISSX) meeting, Munich, Germany. *Drug Metab. Rev.,* **33** (Suppl. 1) 342.

Ross M.K. and R.A. Pegram. Glutathione *S*-transferase-mediated metabolism of bromodichloromethane. 2001 Society of Toxicology meeting, San Francisco, CA. *The Toxicologist*, *Abstract #* *438*.

Pegram, R.A and M.K. Ross. DNA binding potential of bromodichloromethane mediated by glutathione S-transferase theta 1-1. 2001 Society of Toxicology meeting, San Francisco, CA. *The Toxicologist*, *Abstract #* *439*.

Ross, M. K., B. Said, and R.C. Shank. Non-additive DNA-damaging effects of genotoxins in mixture: 2. Covalent binding to DNA. 1999 Society of Toxicology meeting, New Orleans, LA. *The Toxicologist*, *Abstract #* *1090*.

Ross M.K. and R.C. Shank. Modulation of adduct formation after exposure of oligonucleotides containing pre-existing site-specific adducts to bulky carcinogens (1996) Presented at the Histopathobiology of Neoplasia Workshop, sponsored by the American Association of Cancer Research, Keystone, CO.

Shank R.C., M.K. Ross, B. Said, and T. Salib,T. Modulation of DNA adduct formation after exposure of DNA to small and bulky carcinogens. 1995 International Society of Toxicology meeting, Seattle, WA. *The International Toxicologist, Abstract # 12-PD-10.*

Menzel D.B., M.K. Ross, S.V. Oddo, and H. Roth. A preliminary PB-PK model of ingested arsenate in Swiss-Webster mice. 1994 Society of Toxicology meeting, Dallas, TX. *The Toxicologist, Abstract # 68.*

Ross M.K., D. Meacher, S.V. Oddo, R.E. Rassmussen, and D.B. Menzel. Comparative Studies of Ferret and Rat Glutathione *S*-Transferase Subunits. 1994 Society of Toxicology meeting, Dallas, TX. *The Toxicologist*, *Abstract* *# 1326.*

**professional development SINCE 2004 (CONTINUING ED. COURSES/TRAINING):**

Course title: *Reactive Oxygen Species*. March 2009. SOT meeting, Baltimore, MD.

Course title: *Metabolomics.* November 2008. Applications of Mass Spectrometry to the Clinical Laboratory meeting, San Diego, CA.

Course title: *Human Polymorphic Responses to Drugs*. October 2006. ISSX meeting, Puerto Rico.

Course title: *Xenobiotic Transporters*. March 2006. SOT meeting, San Diego, CA.

Course title: *Fundamentals of Nanotechnology: Chemistry, Exposure, and Health Effects*. March 2005. SOT meeting, New Orleans, LA.

Course title: *Regulation of Cytochrome P450 and Transporters*. August 2004. ISSX meeting, Vancouver, BC.

Course title: *Computational Biology, Dose and Response*, March 2004. SOT meeting, Baltimore, MD.

Four days of training on LC-MS instrument at the Thermo Finnigan Training Institute, W. Palm Beach, FL. July 26-29, 2004.

***TEACHING (FTE 10%)***

**graduate courses**

*Course:* Mechanisms of Toxic Action/Molecular Toxicology (CVM 8543, 3 h)

*Instructor of record:* Dr. Matt K. Ross

*Semesters:* Fall, 2009; Fall, 2011; Fall 2015 (problems-based course); Fall 2016; Fall 2017; Fall 2018; Fall 2019; Spring 2022; Spring 2023

*Role:* Taught the majority of lectures in this course (85% of the lectures). See representative student evaluations and a course syllabus in ***APPENDIX 2*** (this class has an average of 6 graduate students per class).

*Course:* Organ Systems Toxicity II(CVM 8533, 3 h)

*Instructor of record:* Dr. Russell Carr

*Semesters:* Spring, 2009; Spring, 2011

*Role:* Taught sections on endocrinology/diabetes/cardiovascular (16% of the lectures; new lectures prepared on metabolic syndrome diseases and atherosclerosis)

*Course:* Organ Systems Toxicity I(CVM 8523, 3 h)

*Instructor of record:* Dr. Russell Carr

*Semesters:* Spring, 2006; Spring, 2008; Spring, 2010; Spring, 2012; Spring, 2018; Spring, 2020

*Role:* Taught sections on liver physiology/pathophysiology (16% of the lectures)

*Course:* Mechanisms of Toxic Action (CVM 8543, 3 h)

*Instructor of record:* Dr. Russell Carr

*Semesters:* Spring, 2005; Spring, 2007

*Role:* Taught sections on xenobiotic metabolism/mutagenesis/carcinogenesis (40% of the lectures; new lectures prepared for the section on biotransformation, genotoxicity, mutagenesis, and carcinogenesis)

*Course:* Current Literature in Toxicology (Special topics course, 1 h)

*Instructor of record:* Dr. Matt K. Ross

*Semesters:* Fall, 2005

*Role:* Coordinated a journal club for graduate students; presented two journal clubs to the students during the course

*Course:* Graduate Student Seminar (CVM 8011, 1 h)

*Instructor of record:* Dr. Matt K. Ross

*Semesters:* Fall, 2004–Spring, 2007 (6 semesters)

*Role:* Coordinated the CVM graduate student seminar series

**Guest lectures in CVM graduate courses**

Two lectures on pharmacokinetics in Dr. Cory Langston’s graduate *Pharmacology* course, CVM 8403 (Spring, 2004; Spring, 2007)

One lecture per course on cell signaling pathways in Dr. Pharr’s *Advanced Immunology* graduate course, CVM 8303 (Spring, 2009-2021). See letter of acknowledgment from course director in ***APPENDIX 2***.

Each May, I give a lecture on grant writing to the veterinary student Summer Research Experience (SRE) program.

**DIRECTED INdividual study**

*Course:* Techniques in Analytical Toxicology

*Instructors of record:* Dr. Matt K. Ross/Dr. Cory Langston

*Semester:* Spring, 2005

*Student:* Jay Pittman, 2-hour course

*Course:* *LC-MS/MS analysis*

*Instructors of record:* Dr. Matt K. Ross

*Semester:* Summer, 2015

*Student:* Samantha Muro, 2-hour course

**Student and Postdoctoral ADVISEMENT**

*Master’s students (Served as Major Professor):*

Tim Streit, tenure in lab 8/05-8/07

Graduated: August, 2007

Current position: Study Director, Covance Pharmaceuticals, Madison, WI

Shuqi Xie, tenure in lab 8/07-12/10

Graduated: December, 2009

Current position: Research Associate, CVM, Mississippi State University

*Ph.D. students trained (Served as Major Professor):*

Lee Magnum, dates 8/09-5/15

Current position: Research Scientist, Elanco Animal Health, Indianapolis, IN.

Anberitha Matthews, dates 8/11-12/15

Current position: Grants Coordinator, Baptist Memorial Hospital, Memphis, TN.

*Anberitha was awarded an NIH pre-doctoral fellowship while in my lab (F31 HL122082-01A1)*

Brittany Szafran DVM, dates 5/17-12/20 (co-advised with Dr. Barbara Kaplan).

Current position: Staff Scientist, CDC, Atlanta, GA.

*Brittany received the following awards: First Place, platform presentation, MSU-CVM Graduate Student Symposium (August, 2018); Roger O. McClellan**Graduate Student Award, SOT Comparative and Veterinary Specialty Section (March 2018); ORED College of Veterinary Medicine Graduate Student Award (March 2020); Society of Toxicology Outstanding Graduate Student Leadership Committee Award, March 2019; 2nd place, Graduate student oral presentation, Society of Toxicology South Central Regional Chapter Annual Meeting, October 2019;* 1st place, Graduate student oral presentation, Society of Toxicology South Central Regional Chapter Annual Meeting, October 2020; 2nd place, *Mississippi State University 3-Minute Thesis Competition, November 2020.* *2021 Outstanding Graduate Student Award (CVM representative). 2021 Boehringer Ingelheim Graduate Veterinary Research Award.*

Oluwabori (Bori) Adekanye, dates 01/22-present

*Bori received the following awards: 2022 CVM Graduate Student Symposium, 2nd Place Poster Award; Fall 2022 MSU Graduate Student Symposium 1st Place Poster Award (DAVFM division), 2023 Mississippi Academy of Sciences (MAS) Meeting 1st Place Poster Award (Molecular and Cellular Biology division), 2024 American Society of Biochemistry and Molecular Biology Travel Award (San Antonio, TX).*

*Postdoctoral Fellows:*

Dr. Kristen Funk (1/11-7/11; current position, Assistant Professor, James Madison University, VA)

Dr. Ran Wang (8/11-8/13; current position, Professor, JAAS, Nanjing, China)

Dr. Jung Hwa Lee (9/13-8/16; current position: Senior Research Associate, CVM, MSU)  
Dr. Xiang Hou (1/16-3/17; current position: postdoctoral fellow, JAAS, Nanjing, China)

*Undergraduate students:*

Katye Herring, tenure in lab 8/07-12/09

Awarded a *Shackouls’ Honors Undergraduate Student Research Award* (summer ’08)

Current: Graduated with an M.D. from the University of Mississippi, Jackson, MS.

Victoria Bittles, 8/09-8/12

Current: Works in children’s education

Jayne Carlson, 1/10-5/10

Current: Works for a non-profit health-care organization in Mississippi

Claire Dagre, 9/09-5/10.

Current: Human Vaccine Institute, Duke University, Durham, NC

Antonio Ward, 5/10-8/10.

Current: Graduated with a PhD in Toxicology at Mississippi State University; now a postdoctoral fellow at the University of South Alabama.

Katie Webb, 5/17-12/17; currently a medical student at the University of Mississippi Medical Center.

Hannah Scheaffer, 1/18-present

Student awards received: *Shackouls’ Honors Undergraduate Student Research Award* (summer ’18), ORED College of Veterinary Medicine Undergraduate Student Award (’20), Goldwater Scholarship (’20), and Astronaut Scholarship (’20); 1st place, undergraduate student poster presentation, Society of Toxicology South Central Regional Chapter Annual Meeting, October 2020

Jessica Brown, 5/17-1/19; currently a DVM student at MSU.

Martin McCandless, 8/18-5/19; currently a medical student at the University of Mississippi Medical Center.

Kaitlyn Odom, 6/19-8/19 (summer research experience); currently an undergraduate student at MSU

Maggie Phillips, 5/21-present

Maggie received the 1st place poster award at the Mississippi Scholars Symposium in the biological sciences section (February, 2023)

All of the above undergraduate students were supported by R15 grants in our lab.

*Veterinary students – performed summer research in the lab:*

Shellaine Lentz, tenure in lab 5/05-8/05; also 1/07-5/07 as a student worker

Lloyd Reitz, tenure in lab 5/06-8/06

Kate Lightner, tenure in lab 5/07-8/07

Kim Pluta, tenure in lab 5/09-8/09

Caitlin Wonnacot, tenure in lab 5/22-8/22

[Stipend support for the veterinary students was provided by NIH T35RR007071 (Lawrence, Varela-Stokes, PIs)]

*Graduate student committees (MS or PhD)*:

Past students: J.E. Moran, MS (advisor: J.E. Chambers)

Frank Johnson, PhD (advisor: R.L. Carr)

Jay Pittman, PhD (advisor: J.E. Chambers)

Tim Streit, MS (advisor: M.K. Ross)

Shuqi Xie, MS student (advisor: M.K. Ross)

Paul Eden, PhD student (advisor: J.E. Chambers)

Chelsea Macintosh, MS student (advisor: J. Warnock)

Guohua Yang, MS student (advisor: H. Wan)

Ron Pringle, PhD student (advisor: J.E. Chambers)

Antonio Ward, PhD student (advisor: J.E. Chambers)

Samantha Muro, MS student (advisor: A. Mackin)

Afzaal Mohammed, PhD student (advisor: R.L. Carr)

Cherry Ho, MS student (advisor: Chinling Wang)

Jason Garcia, PhD student (advisor: J.E. Chambers)

Royce Nichols, PhD student (advisor: J.E. Chambers)

Yue-Jia Lee, PhD student (advisor: Chinling Wang)

Navatha Alugubelly, PhD student (advisor: R.L. Carr)

Jim Nichols, PhD student (advisor: B. Kaplan)

Sandeep Kondakala, PhD student (advisor: T. Howell)

Marissa Lucento, MS student (advisor: J.E. Chambers)

Ali Marchant, MS student (advisor: Larry Hanson)

Current students: Chiquita Price, PhD student (advisor: J.E. Chambers)

Jacky Perraza, MS student/DVM resident (advisor: Carolyn Betbeze)

KarLee McNeel, MS student (Biological Engineering) (advisor: S. Simpson)

***SERVICE (FTE 15%)***

**EXTERNAL REVIEW PANELS:**

Invited member, USEPA Federal Insecticide, Fungicide and Rodenticide Act Scientific Advisory Panel Meeting (August 16-17, 2007) on “Assessing Approaches for the Development of PBPK Models of Pyrethroid Pesticides” held at the Environmental Protection Agency Conference Center, Arlington, VA.

Invited member, NIOSH Study Section, Philadelphia, PA, June 6-10, 2011.

Invited member, NCI Agricultural Health Study (AHS) National Advisory Panel, Rockville, MD, March 1-2, 2012.

Invited member, NIH Study Section, Special Emphasis Panel (review of R15 grants), November 29, 2012.

Invited member, NIH Study Section, Systemic Injury by Environmental Exposures, February 5-6, 2013.

Invited member, NIH Study Section, Systemic Injury by Environmental Exposures, November 11-12, 2013.

International Agency for Research on Cancer (IARC) Monograph vol. 112 Working Group (March, 2015)

International Agency for Research on Cancer (IARC) Monograph vol. 117 Working Group (October, 2016) *Subgroup chair* for the Mechanisms subgroup.

Invited grant reviewer, Austrian Science Fund (November 2015, April 2016)

Invited grant reviewer, UK Diabetes (January 2018)

Invited member, NCI Agricultural Health Study (AHS) National Advisory Panel, Rockville, MD, July 31-Aug 1, 2018.

Invited grant reviewer, Czech Science Foundation (September 2018)

Invited grant reviewer, NIH Study Section, NIGMS SCORE applications, October 15, 2018.

Invited grant reviewer, NSF Chemical Catalysis Program in the NSF Division of Chemistry, August 31, 2018.

Invited grant reviewer, NIH Study Section, Atherosclerosis and inflammation R15 applications, April 5, 2019.

Invited grant reviewer, NIH Study Section, NIGMS SCORE applications, June 28, 2019.

Invited grant reviewer, NIH Study Section, NIGMS SCORE applications, October 11, 2019.

Invited grant reviewer, Czech Science Foundation (September 2020)

Invited grant reviewer, American Heart Association (AHA) AIREA grant reviewer, January 28, 2023.

**REVIEWER/EDITORIAL BOARD FOR JOURNALS:**

Ad-hoc reviewer for scientific journals (number of manuscripts reviewed for each journal indicated in parentheses; updated July 2018):

*ACS Books (1)*, *ACS Chemical Biology* (1), *ACS Chemical Neuroscience* *(1)*, *Analytical Biochemistry (2), Biochemical Pharmacology (6),* *BMC Genomics* *(1)*, *BMC Research Notes (2), Cardiovascular Toxicology (6)*, *Chemico-Biological Interactions (17), Chemical Research in Toxicology (4), Chemistry & Biology (1), Comparative* *Biochemistry and Physiology (1), Current Drug Metabolism (1), Environmental and Molecular Mutagenesis (1), Expert Opinion Pharmaceutical Patents (2), Food and Chemical Toxicology (2), Food and Function (1), Journal of Agricultural and Food Chemistry (4), Journal of Biochemical and Molecular Toxicology (2), Journal of Cell Physiology (1), Journal of Child and Adolescent Psychopharmacology (1), Journal of Lipid Research (1), Insect Biochemistry and Molecular Biology (1), International Journal of Toxicology (1), Life Sciences (2), Molecules (1), Nature Chemical Biology (1), Neurotoxicology (4), Plos One (3), Scientific Reports (1), Toxicology and Applied Pharmacology (3), Toxicology In Vitro (3), Toxicological Sciences (6), Toxicology (3), Pesticide Biochemistry and Physiology (3), Journal of Bacteriology (1), African Journal of Biotechnology (1), Ecotoxicology and Environmental Safety (2), Journal of Pharmacology and Experimental Therapeutics (1).*

**Editorial Advisory Boards**: *Toxics* (2013-present); *Drug Metabolism Letters* (2017-present); Cardiovascular Toxicology (2020-present).

**University SERVICE:**

-- Hazardous Waste Committee (Member, Fall 2005 – Fall 2006)

-- Life Sciences and Biotechnology Institute (LSBI) Task Force (Member, Spring 2007)

-- Radiation, Chemical and Laboratory Safety Committee (Member, Fall 2006 – Fall 2016)

-- Chair, Radiation, Chemical and Laboratory Safety Committee (Fall 2013 – Fall 2016)

-- Search committee, Environmental Health and Safety Director position (Member, Spring 2013)

**department and COLLEGE SERVICE:**

-- CVM Graduate Program Advisory Committee (GPAC), 2022-present

-- Department of Basic Sciences Department Head Search Committee (2019)

-- Chair, *Department of Basic Sciences Tenure and Promotion Committee* (2018-2019, for Assistant Professors going up for tenure and promotion), (2020, for Associate Professors going up for promotion).

-- *Research Advisory Committee*, College of Veterinary Medicine, MSU (2010-2012)

-- *College of Veterinary Medicine Tenure and Promotion Committee* (2011-2016); Chair (2016)

-- *Lipidomics Research Program* Director, College of Veterinary Medicine,MSU (2011-present)

-- Ad-hoc selection committee to review applications of veterinary students applying for positions as NIH-funded summer researchers at the CVM (Spring 2004)

-- Interviewer of veterinary student applicants (Spring 2006)

-- Faculty Search Committees (Toxicology positions), Department of Basic Sciences (Spring 2008, Fall 2012, Spring 2013); (Chair of search committees; Fall 2012, Spring 2013)

-- Served as judge for veterinary and graduate student research presentations during CVM Research Day (Fall 2007; Fall 2008; Fall, 2011; Fall 2012; every year since then).

-- Advisor and consultant for investigators, students, and staff members in the Center for Environmental Health Sciences and other CVM faculty members regarding bioanalytical needs, experimental design, and instrumentation. Advice was given on the use of specific analytical platforms, including GC-MS, LC-MS, and LC-UV. Played a significant role in determining which instrumentation should be purchased by the Center for bioanalytical needs. I spend a significant amount of time making sure the LC-MS/MS is maintained, and I perform routine and non-routine maintenance (e.g., diagnosing and replacing parts that a service engineer would do to save money).

-- In-house reviewer of manuscripts at the CVM (average of 3 per year).

-- Research Strategic Planning committee, College of Veterinary Medicine, Mississippi State University (2010).

-- Judge for student presentations, fall meeting of the South Central Chapter of the Society of Toxicology Meeting held at Mississippi State University (2004, 2005, 2006).

**CLINICAL and DIAGNOSTIC SERVICE:**

LC-MS analyses of dog and bird blood for the presence of specific antibiotics as part of a clinical study (PI; Dr. Cory Langston, College of Veterinary Medicine, MSU). 2005-2006.

LC-MS/MS analyses of dog blood for dantrolene and its major metabolite as part of a clinical study (PI; Drs. Todd Archer/Andrew Mackin, College of Veterinary Medicine, MSU). 2011-1012.

LC-MS/MS analyses of horse blood for nadolol as part of a clinical study (PI; Dr. Chipper Swiderski, College of Veterinary Medicine, MSU). 2011-2012.

LC-MS analyses of bovine liver samples for the presence of atrazine residues (PI; Dr. John Roberts, College of Veterinary Medicine, Auburn University). 2008.

***Appendix 1:* GRANTS Submitted but not funded (as PI or co-I)**

***Submitted as Associate Professor at MSU (2010-present)*:**

***YEAR 2018***

NSF Major Research Instrumentation Grant Wan (PI)

Acquisition of a Lumos Orbitrap for Proteomics, Lipidomics, and Glycomics Research

(total costs, $1.5 million)

Role: co-I

Submitted: January 2018 (scored meritorious; not funded)

NIH/NIEHS 1R15ES029672-01 Crow (PI)

Pesticides and atherosclerosis

(total costs $436,500)

The major goal of this project is to evaluate whether an organophosphorus insecticide (chlorpyrifos) can induce disease in atherosclerotic-susceptible low-density lipoprotein (LDL) receptor deficient mice that express human CES1 in its macrophages.

***YEAR 2017***

NIH/NIAID R21 Grant Ross (PI)

Role of Carboxylesterases in Innate Immunity

(total costs, $324,000)

Submitted: February 2017 (not funded)

NIH/NIAID R21 Grant Elder (PI)

Extracellular Matrix-Targeting Intraarticular Therapy for Osteoarthritis

(total costs, $397,375)

Role: co-I

Submitted: October 2017 (not funded)

***YEAR 2016***

USDA-NIFA Grant Ross (PI)

Targeting the Endocannabinoid System to Enhance Immunity

1/1/2017-12/31/19 (total costs, $500,000)

Submitted: August 2016 (scored meritorious; not funded)

NIH/NIEHS U01 Grant Carr, Kaplan (PIs)

Developmental immunology and chlorpyrifos exposure

(total costs, $1.3 million)

Role: co-I

Submitted: July 2016 (scored; not funded)

NIH/NINS U01 Renewal Grant Chambers (PI)

Novel nerve agent antidotes

(total costs, $1.3 million)

Role: co-I

Submitted: August 2016 (not funded)

***YEAR 2014***

NIH/NIEHS R21 Grant Ross (PI)

Macrophage foam cells and atherosclerosis

(total costs, $324,000)

Submitted: February 2014 (scored; not funded)

***YEAR 2013***

Internal Grant, MSU-CVM/SRI Proposal (total costs, $50,000) – Ross, PI (not funded)

NIH R21 Grant (total costs, $324,000) – role: co-I, (Kaplan, PI) (not funded)

Morris Foundation (total costs, $100,000) – role: co-I, (Thomason, PI) (not funded)

***YEAR 2012***

NIH/NIEHS R01 Grant Filipov (PI)

Molecular Neurotoxicology of Manganese

7/1/12-6/30/17 (total costs, $1.8 million)

Role:Co-Principal Investigator

Submitted: 2/5/12 (scored; not funded)

***YEAR 2011***

American Heart Association Ross (PI)

Lipid glyceryl ester homeostasis in macrophages and perturbation by environmental toxicants. 7/1/11-6/30/13 (total costs, $165,000)

Submitted: 2/3/11 (not funded)

NIH/NIEHS R01 Grant Filipov (PI)

Atrazine-mediated damage to basal ganglia

7/1/11-6/30/16 (total costs, $1.8 million)

Role: Co-Principal Investigator

Submitted: 2/5/11 (not funded)

NIH/NIAID R21 Grant Swiderski (PI)

Nadolol grant

Role: Co-Principal Investigator; perform LC-MS/MS analysis on horse serum samples to examine nadolol PK behavior.

Submitted: Oct. 2011 (not funded)

NIH/NIEHS R01 Grant Diabetes grant Chambers (PI)

Role: Co-Principal Investigator; perform isoprostane analysis.

Submitted: June 2011 (not funded)

***YEAR 2010***

NIH/NIEHS R01 Grant M.K. Ross (PI)

($1,000,000)

*Title:* CES1 phenotype in human liver

***Role:* Principal Investigator**

Submitted Feb. 2010

**Status:** **Not Funded**

NIH/NIEHS R15 Grant Carr (PI)

($1,000,000)

*Title:* Role of OP Insecticides on Neurodevelopment

***Role:* Co-Principal Investigator**

Submitted June 2010

**Status:** **Not Funded**

***Submitted as Assistant Professor at MSU (2004-2010)*:**

***YEAR 2009***

**17.** NIH R01ES018875 (not discussed) J. Allen Crow (PI)

7/1/10-6/30/13 (total costs, $1,001,000)

*Title:* Effect of Organophosphorus Pesticides on Atherosclerosis

***Role:* Co-Principal Investigator**

**Status: Not funded**

**16.** NIH R01MD003974 (pending, score 233) Janice E. Chambers (PI)

9/1/09-8/31/14 (total costs, $1,732,225)

*Title:* Cardiovascular Disease and Diabetes Biomarkers in Mississippi African Americans

***Role:* Co-Principal Investigator**

**Status:** **Not funded**

**15.** NIH P20MD005120 (pending, score 41) Janice E. Chambers (PI)

9/30/09-9/29/11 (total costs, $1,229,103)

*Title:* Exploratory Center of Excellence in Health Disparities in the Mississippi Delta

***Role:* Co-Principal Investigator**

**Status:** **Not funded**

**14. PI Name:** Matt Ross

**Grant Title:** Knockdown of Carboxylesterases (CEs) by Inhibitors: Uncovering Substrates for CEs

**Application ID:** 1RC1DK087053-01 (Challenge grant)

**Agency and grant type**: National Institute of Diabetes, Digestive and Kidney Disease (NIDDK)—RC1

**Duration of grant in months:** 24 months

**Total Cost:** $ 847,078

**Date submitted:** April, 2009

**Status:** Not funded -- (Research Documentation #33)

**13. PI Name:** Janice E. Chambers (co-PI, Matt Ross)

**Grant Title:** Lactonase Activity of Paraoxonases (PON1): A Biomarker for Cardiovascular Disease

**Application ID:** 1RC1HL100409 (Challenge Grant)

**Agency and grant type**: National Institute of Heart, Lung and Blood (NIHLB)—RC1

**Duration of grant in months:** 24 months

**Total Cost:** $1,000,000

**Date submitted:** May, 2009

**Status:** Not funded -- (Research Documentation #34)

***YEAR 2008***

**12. PI Name:** Janice Chambers (M.Ross, Project 3 PI & Bioanalytical Chemistry Core Director)

**Grant Title:** Mechanisms ofPesticide Toxicity (COBRE) (Project 3: Characterization of the carboxylesterase phenotype in humans)

**Application ID:** NIH P20RR017661-07A2

**Agency and grant type**: National Institutes of Health (NIH)--P20 Developmental Grant

**Duration of grant in months:** 60 months

**Total cost of center grant:** $10,690,600

**Date submitted:** October, 2008

**Status:** Overall grant score (222); not funded -- (Research Documentation #35)

NOTE: The COBRE renewal grant was submitted on 3 separate occasions (2006, 2007, and 2008). It was not funded. However, my individual research project was rated ‘outstanding’ in three separate study sections. Moreover, the Bioanalytical Chemistry Core that I wrote for the 2007 and 2008 submissions was also rated ‘excellent’. I have included the summary statement (grant review) of my research project and the bioanalytical core from the 2008 submission (see Research Documentation #36).

**11. PI Name:** Matt Ross

**Grant Title:** Effect of Xenobiotic and Oxidative Stress on Macrophage Lipid Metabolism

**Application ID:** [1R21ES016631-01](https://commons.era.nih.gov/commons/genericStatus.do?actionRole=nonPI&applID=7451279&uhf-token=DuA1sxvz%2BQFn0aFK%2FlGWL0Eos%2Fw%3D)A1

**Agency and grant type**: National Institute of Environmental Health Sciences (NIEHS)—R21

**Duration of grant in months:** 24 months

**Total Cost:** $386,391

**Date submitted:** July 15, 2008

**Status:** Not funded -- (Research Documentation #37)

***YEAR 2007***

**10. PI Name:** Matt Ross (Steve Gwaltney, Co-PI)

**Grant Title:** Kinetic Study of Side-Door Mutants of Human Carboxylesterase 1

**Application ID:** [1R15GM083289-01](https://commons.era.nih.gov/commons/genericStatus.do?actionRole=nonPI&applID=7367242&uhf-token=KRGU2oTl2OgcwI%2Fnpr8zxl%2FyClU%3D)

**Agency and grant type**: National Institute of General Medical Sciences (NIGMS)—R15

**Duration of grant in months:** 36 months

**Total Cost:** $214,500

**Date submitted:** February 25, 2007

**Status:** Scored; not funded -- (Research Documentation #38)

**9. PI Name:** Steve Gwaltney (Matt Ross, Co-PI)

**Grant Title:** Kinetic Study of Side-Door Mutants of Human Carboxylesterase 1

**Application ID:** [1R15GM083289-01](https://commons.era.nih.gov/commons/genericStatus.do?actionRole=nonPI&applID=7367242&uhf-token=KRGU2oTl2OgcwI%2Fnpr8zxl%2FyClU%3D)A1 (resubmission)

**Agency and grant type**: National Institute of General Medical Sciences (NIGMS)—R15

**Duration of grant in months:** 36 months

**Total Cost:** $214,500

**Date submitted:** October 25, 2007

**Status:** Not funded -- (Research Documentation #39)

**8. PI Name:** Matt Ross

**Grant Title:** Effect of Xenobiotic and Oxidative Stress on Macrophage Lipid Metabolism

**Application ID:** [1R21ES016631-01](https://commons.era.nih.gov/commons/genericStatus.do?actionRole=nonPI&applID=7451279&uhf-token=DuA1sxvz%2BQFn0aFK%2FlGWL0Eos%2Fw%3D)

**Agency and grant type**: National Institute of Environmental Health Sciences (NIEHS)—R21

**Duration of grant in months:** 24 months

**Total Cost:** $393,250

**Date submitted:** June 15, 2007

**Status:** Not funded -- (Research Documentation #40)

**7. PI Name:** Janice Chambers (M.Ross, Project 4 PI & Bioanalytical Chemistry Core Director)

**Grant Title:** Mechanisms ofPesticide Toxicity (COBRE) (Project 4: Characterization of the carboxylesterase phenotype in humans)

**Application ID:** NIH P20RR017661-06A1

**Agency and grant type**: National Institutes of Health (NIH)--P20 Developmental Grant

**Duration of grant in months:** 60 months

**Total Cost:** $10,483,105

**Date submitted:** July, 2007

**Status:** Overall grant score (200); not funded

***YEAR 2006***

**6. PI Name:** Matt Ross

**Grant Title:** Dysregulated Hydrolase Activity in Macrophages During Atherosclerosis

**Application ID:** [1R01HL089355-01](https://commons.era.nih.gov/commons/genericStatus.do?actionRole=nonPI&applID=7297624&uhf-token=EQ4Nk2uvUFfdu9l6i9wU3CjVId4%3D)

**Agency and grant type**: National Institute of Heart, Lung, and Blood (NIHLB)—R01

**Duration of grant in months:** 48 months

**Total Cost:** $1,001,000

**Date submitted:** October 1, 2006

**Status:** Not funded -- (Research Documentation #41)

**5. PI Name:** Janice E. Chambers (Matt Ross, Project 4 PI)

**Grant Title:** Mechanisms ofPesticide Toxicity (COBRE) (Project 4: Characterization of the carboxylesterase phenotype in humans)

**Application ID:** NIH P20RR017661-06

**Agency and grant type**: National Institutes of Health (NIH)--P20 Developmental Grant

**Duration of grant in months:** 60 months

**Total Cost:** $10,483,105

**Date submitted:** August, 2007

**Status:** Overall grant score (253), not funded

***YEAR 2005***

**4. PI Name:** Matt Ross

**Grant Title:** Comparison of Xenobiotic Metabolizing Enzymes in Livers of Lean and Obese Rats

**Application ID:** [1R21ES014704-01](https://commons.era.nih.gov/commons/genericStatus.do?actionRole=nonPI&applID=7086503&uhf-token=peQnwWJ00xH1%2BB%2B7KJd13Mnxk1w%3D)

**Agency and grant type**: National Institute of Environmental Health Sciences (NIEHS)—R21

**Duration of grant in months:** 24 months

**Total Cost:** $393,250

**Date submitted:** June 1, 2005

**Status:** Not funded -- (Research Documentation #42)

**3. PI Name:** Matt Ross

**Grant Title:** Kinetics of Pyrethoid Hydrolysis by Carboxylesterase Site-specific Mutants

**Agency and grant type**: Oak Ridge Associated Universities Young Investigator Grant

**Duration of grant in months:** 12 months

**Total Cost:** $10,000.

**Date submitted:** January, 2005

**Status:** Not funded (This was one of two grant applications selected from a total of 10 internal MSU applications that was permitted for external submission – (Research Documentation #43)

**2. PI Name:** Janice E. Chambers (Project 1 co-PI: Matt Ross)

**Grant Title:** The Exposure-Dose-Effects Continuum for Chemical Mixtures: Predictive Modeling

**Agency and grant type**: National Institute of Environmental Health Sciences (NIEHS)—P42 Superfund grant

**Duration of grant in months:** 60 months

**Date submitted:** April, 2005

**Status:** Not funded -- (Research Documentation #44)

**1. PI Name:** Jeff Eells (co-PI, Matt Ross)

**Grant Title:** Nurr1-null heterozygous genotype and stress in sensorimotor gating

**Agency and grant type**: NIH, RO1

**Duration of grant in months:** 60 months

**Total Cost:** $ 884,527

**Date submitted:** October 1, 2005

**Status:** Not funded

***Appendix 2:* course syllabus, representative student evaluations, and letter of ACKNOWLEDGMENT**

1. **recent Course syllabus for cvm 8543 (*mechanisms of toxicant action*).**
2. **student evaluations for cvm 8543 (*mechanisms of toxicant action*) and CVM 8523** (**Organ Systems Toxicity I).**
3. **letter of acknowledgment from course director for the cell signaling lectures given in *Advanced Immunology*, CVM 8303 (Spring, 2009-18).**