CURRICULUM VITAE

Andrew A Amoscato
University of Pittsburgh

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Birthplace: New York City, NY

EDUCATION and TRAINING

Undergraduate

1974 - 1978	Long Island University Greenvale, New York	BS Biology and Chemistry

Graduate

1978 - 1984	University of Texas Health Science Center at Houston Graduate School of Biomedical Sciences Houston, Texas	PhD Biochemistry

Postgraduate

1984 - 1989	Department of Surgery University of Cincinnati	Biochemistry

APPOINTMENTS and POSITIONS

Academic

1989 - 2001	School of Medicine University of Pittsburgh	Instructor Pathology
2001 - 2006	School of Medicine University of Pittsburgh	Assistant Professor Pathology (non-tenure stream)
2006 - 2010	School of Medicine University of Pittsburgh	Associate Professor Pathology (non-tenure stream)
2010 – Present	Graduate School of Public Health	Associate Professor

	University of Pittsburgh Pittsburgh, PA	(visiting, non-tenure stream) Dept. of Occupational and Environmental Health
2014-present	Graduate School of Public Health University of Pittsburgh Pittsburgh, PA	Res. Associate Professor

Non-Academic

MEMBERSHIP in PROFESSIONAL and SCIENTIFIC SOCIETIES

Member, American Association of Immunologists
Member, American Association for the Advancement of Science
Member, American Chemical Society
Member, American Association for Caner Research
Member, American Society for Mass Spectrometry

HONORS and AWARDS

1978	Academic Excellence Division of Science Long Island University

PROFESSIONAL ACTIVITIES

1. a. Teaching
b. Other Teaching

Year(s)	Course Number & Title	Role
1992-1993	Introduction to Clinical Medicine/Oncology section	Lecturer ; responsible for section on tumor immunology
1992-1992	Pathology Graduate course	Lectured on aminopeptidase and NK cells
2007-2008	Fall Biologic Therapy of Cancer series	Responsible for “section” on Principles of Mass Spectrometry and Its Applications

MENTORING AND ADVISING

1c. Major Advisor for Graduate Student Essays, Theses and DissertationsUndergraduate Students

Year(s)	Student's Name & Degree/Discipline	Advisor's Role
2005-2009	Oriana Hunter, Ph.D. 2009; Mechanical cyclic strain induces ceramide generation in endothelial cells	Major advisor

1d. Service on Masters or Doctoral committees

Year(s)	Student's Name & Degree/Discipline	Advisor's Role
2008-2009	Siuwah Tang	Member of MastersThesis Committee

1f. Supervision of undergraduate students, post-doctoral students, residents and fellows

Year(s)	Student's Name & Degree/Discipline
2014-present	Mr. Arthur Fink (pre-doctoral student) Mass spectrometry/general biochemistry
2009-present	Dr. L.J. Sparvero (data analyst)
2010 - 2011	Dr. Alejandro Samhan Arias (post doc) Mass spectrometry and liquid chromatography/General biochemistry
2011-2012	Olga Demidova (undergraduate) Mass spectrometry and biochemistry
2000-2001	Dr. Tatsuya Kanto (fellow) Mass spectrometry and biochemistry
2003-2005	Dr. Masatoshi Eto (fellow) Mass spectrometry and biochemistry
2004-2005	Dr. J. Bennouna (fellow) Mass spectrometry and biochemistry
2005-2006	Dr. K. Omoto (fellow) Mass spectrometry and biochemistry

Current research support

Funding Agency:	NIH
Grant Number:	1R01NS76511-02
Title of Grant	Mapping Lipid Oxidation in Traumatic Brain Injury by Mass Spectrometric Imaging
Pricipal Investigator:	V. Kagan/H. Bayir
Amoscato Role on grant:	Co-Investigator
Percent Effort:	12.5 %

Funding Agency: NIH

Grant Number:	R01ES020693-03
Title of Grant:	Oxygenated Species of Cardiolipins as Biomarkers of Mitochondrial Dysfunction.
Principal Investigator:	V. Kagan, Y. Tyurina
Amoscato Role on Grant:	Co-Investigator
Percent Effort:	47.5 %

Funding Agency:	Multiple Sclerosis Society
Grant Number:	RG5045A1/1
Title of grant:	The role of the nuclear lamina in myelin regulation and demyelination
Principal Investigator:	V. Kagan
Role on grant:	Co-investigator
Percent Effort:	20 %

Funding Agency:	Human Frontiers in Science Program
Grant number:	RGP0013/2014
Title of grant:	Oxidized Lipidome: The unspoken language of non-apoptotic cell death
Principal Investigator:	V. Kagan
Role on grant:	Co-Investigator
Percent Effort:	20.2 %

Pending research support

Funding Agency:	NIH
Title of Grant:	Irradiation-Induced Cardiolipin Signaling: Mitophagy, Apoptosis, mito-DAMP
Principal Investigator:	J. Jiang
Amoscato Role on Grant:	Co-Investigator
Percent Effort:	10.0 %

Funding Agency	NIH
Title of Grant	Development of Novel LC-MS Analytical Tools for the Quantitative Analysis of Hemigramicidin S Conjugates with Nitroxides (JP4-039).
Principal Investigator:	J. Greenberger
Amoscato Role on Grant:	Pilot Project within CMCR

Funding Agency:	NIH
Title of Grant:	Mechanisms and protection of lung injury: oxidative lipidomics approach.
Principal Investigator:	B. Pitt
Amoscato Role on Grant:	Co-Investigator

Funding Agency: NIH
Title of Grant: Cardiolipin, damage associated molecular patterns and pulmonary endothelium
Amoscato Role on Grant: Co-Investigator
Percent Effort: 25.0 %

Funding Agency: NIH
Title of Grant: Imaging Mass Spectrometry for Oxidized Lipidomics in Pulmonary Endothelium Role: Co-Investigator
Principal Investigator: B Pitt
Amoscato Role on Grant: Co-Investigator

Percent Effort: 30.0 %

Past research support

Funding Agency: NIH
Title of Grant: Center for Countermeasures Against Radiation
Principal Investigator: J. Greenberger
Amoscato Role on Grant: Co-Investigator
Years Inclusive: 9/1/2010 - 8/31/2015
Percent Effort: 45.0 %
Total Direct Costs: $207,723

Funding Agency: NIH
Grant Number: RO1 NSO61817
Title of Grant: Oxidative Lipidomics in Pediatric Traumatic Brain Injury
Principal Investigator: H. Bayir
Amoscato Role on Grant: Co-Investigator
Percent Effort: 20.0%

Funding Agency: UPCI Pilot Project Grant Program: Department of Radiation Oncology
Title of Grant: The role of ceramide, phosphatidylglycerol and cardiolipin in radiation-induced apoptosis
Principal Investigator: Amoscato
Amoscato Role on Grant: PI (sole)
Total Direct Costs: $20,000

Funding Agency: Competitive Medical Research Foundation
Title of Grant: Peptide Aquisition and Delivery to Dendritic Cells
Principal Investigator: Amoscato
Amoscato Role on Grant: PI (sole)
Total Direct Costs: $114,000

Funding Agency: The Shriners Hospital for Crippled Children. #15877
Title of Grant: Receptors for Synthetic Peptide Immunomodulators on Leukocytes for Normal Individuals and Burn Patients.
Amoscato Role on Grant: Co-Investigator

Funding Agency: American Cancer Society Institutional Research Grant
Grant Number: IN-58-29
Title of Grant: The role of Aminopeptidases in NK Cell Function.
Amoscato Role on Grant: PI (sole)
Total Direct Costs: $5,500

Funding Agency: National Leukemia Association.
Title of Grant: Surface Aminopeptidases as Potential Modulators of CD2 Expression in NK Cells.
Amoscato Role on Grant: PI (sole)
Total Direct Costs: $15,000

Funding Agency: National Leukemia Association.
Title of Grant: Regulation of NK cell cytotoxicity and CD2 expression by cell surface aminopeptidases.
Amoscato Role on Grant: PI (sole)
Total Direct Costs: $20,000

Funding Agency: NIH
Grant Number: 5P30 CA 47904-17
Title of Grant: Cancer Center Support Grant Other Faculty Support Proteomics/Mass Spectrometry Facility
Principal Investigator: Herberman
Amoscato Role on Grant: Co-Investigator
Years Inclusive: 8/1/1997 - 7/31/2009
Percent Effort: 3.0 %
Total Direct Costs: $3,367,676

Funding Agency: NIH
Title of Grant: Radiation-induced ceramide generation
Principal Investigator: Amoscato
Amoscato Role on Grant: PI (sole)
Years Inclusive: 4/2003 - 3/2008
Percent Effort: 40.0 %
Total Direct Costs: $260,196

PUBLICATIONS

Peer-reviewed Publications

1. **Amoscato AA**, Babcock GF, Nishioka K. Analysis of contaminants in commercial preparations of the tetrapeptide tuftsin by high-performance liquid chromatography. Journal of chromatography. 1981 Jan 23; 205 (1):179-84. PMID: 6894150.
2. Nishioka K, **Amoscato AA**, Babcock GF. Tuftsin: a hormone-like tetrapeptide with antimicrobial and antitumor activities. Life sciences. 1981 Mar 9; 28 (10):1081-90. PMID: 6262587.
3. Babcock GF, **Amoscato AA**, Nishioka K. Effect of tuftsin on the migration, chemotaxis, and differentiation of macrophages and granulocytes. Annals of the New York Academy of Sciences. 1983; 419:64-74. PMID: 6585173.
4. Nishioka K, Babcock GF, Phillips JH, Banks RA, **Amoscato AA**. In vivo and in vitro antitumor activities of tuftsin. Annals of the New York Academy of Sciences. 1983; 419:234-41. PMID: 6324636.
5. **Amoscato AA**, Davies PJ, Babcock GF, Nishioka K. Receptor-mediated internalization of tuftsin. Annals of the New York Academy of Sciences. 1983; 419:114-34. PMID: 6324633.
6. **Amoscato AA**, Davies PJ, Babcock GF, Nishioka K. Receptor-mediated internalization of tuftsin by human polymorphonuclear leukocytes. Journal of the Reticuloendothelial Society. 1983 Jul; 34 (1):53-67. PMID: 6308252.
7. Nishioka K, **Amoscato AA**, Babcock GF, Banks RA, Phillips JH. Tuftsin: an immunomodulating peptide hormone and its clinical potential as a natural biological response modifier. Cancer investigation. 1984; 2 (1):39-49. PMID: 6322938.
8. **Amoscato AA**, Babcock GF, Nishioka K. Synthesis and biological activity of [L-3,4-dehydroproline3]-tuftsin. Peptides. 1984; 5:489. PMID: 6548023.
9. **Amoscato AA**, Babcock GF, Sramkoski RM, Hynd BA, Alexander JW. Synthesis of two biologically active fluorescent probes of thymopentin. International journal of peptide and protein research. 1987 Feb; 29 (2):177-86. PMID: 2883150.
10. **Amoscato, AA**, Babcock, GF,and Nishioka, K. Synthesis and biological activity of L-3-4-dehydroproline 3-tuftsin. Peptides 5:489-494.
11. **Amoscato AA,** Balasubramaniam A, Alexander JW, Babcock GF. Degradation of thymopentin by human lymphocytes: evidence for aminopeptidase activity. Biochimica et biophysica acta. 1988 Jul 20; 955 (2):164-74. PMID: 3293664.
12. **Amoscato AA**, Alexander JW, Babcock GF. Surface aminopeptidase activity of human lymphocytes. I. Biochemical and biologic properties of intact cells. Journal of immunology (Baltimore, Md. : 1950). 1989 Feb 15; 142 (4):1245-52. PMID: 2915119.
13. **Amoscato AA,** Sramkoski RM, Babcock GF, Alexander JW. Neutral surface aminopeptidase activity of human tumor cell lines. Biochimica et biophysica acta. 1990 Dec 5; 1041 (3):317-9. PMID: 2268678.
14. **Amoscato AA**, Brumfield AM, Sansoni SB, Herberman RB, Chambers WH. Natural killer cell cytolytic granule-associated enzymes. I. Purification, characterization, and analysis of function of an enzyme with sulfatase activity. Journal of immunology (Baltimore, Md. : 1950). 1991 Aug 1; 147 (3):950-8. PMID: 1861083.
15. **Amoscato AA**, Spiess RR, Sansoni SB, Herberman RB, Chambers WH. Degradation of enkephalins by rat lymphocyte and purified rat natural killer cell surface aminopeptidases. Brain, behavior, and immunity. 1993 Jun; 7 (2):176-87.

PMID: 8347898.
16. **Amoscato AA,** Spiess RR, Brumfield AM, Herberman RB, Chambers WH. Surface aminopeptidase activity of rat natural killer cells. I. Biochemical and biological properties. Biochimica et biophysica acta. 1994 Apr 28; 1221 (3):221-32. PMID: 8167143.
17. Yasumura S, **Amoscato A**, Hirabayashi H, Lin WC, Whiteside TL. Proliferation of hematopoietic cell lines induced by a soluble factor derived from human squamous cell carcinomas of the head and neck. Cancer immunology, immunotherapy : CII. 1994 Dec; 39 (6):407-15. PMID: 8001029.
18. Chambers WH, **Amoscato AA**, Smith MS, Kenniston TW, Herberman RB, Appasamy PM. Prolactin receptor expression by rat NK cells. Natural immunity. 1995; 14 (3):145-56. PMID: 8832898.
19. Rabinowich H, Lin WC, **Amoscato A**, Herberman RB, Whiteside TL. Expression of vitronectin receptor on human NK cells and its role in protein phosphorylation, cytokine production, and cell proliferation. Journal of immunology (Baltimore, Md. : 1950). 1995 Feb 1; 154 (3):1124-35. PMID: 7529790.
20. Hirabayashi H, Yasumura S, Lin WC, **Amoscato A**, Johnson JT, Herberman RB, Whiteside TL. Production by human squamous cell carcinoma of a factor inducing activation and proliferation of immune cells. Archives of otolaryngology--head & neck surgery. 1995 Mar; 121 (3):285-92. PMID: 7873144.
21. Lotze MT, Shurin M, Davis I, **Amoscato A**, Storkus WJ. Dendritic cell based therapy of cancer. Advances in experimental medicine and biology. 1997; 417:551-69. PMID: 9286419.
22. Appasamy PM, Kenniston TW Jr, **Amoscato AA**. Requirement for surface aminopeptidase activities during development of CD8+ fetal thymocytes. Cellular immunology. 1997 Apr 10; 177 (1):1-8. PMID: 9140090.
23. **Amoscato AA**, Prenovitz D, Lotze MT. Rapid extracellular degradation of synthetic class I peptides by human dendritic cells. Jounral of Immunology. 1998; 161:4023.
24. Herr W, Ranieri E, Gambotto A, Kierstead LS, **Amoscato AA,** Gesualdo L, Storkus WJ. Identification of naturally processed and HLA-presented Epstein-Barr virus peptides recognized by CD4(+) or CD8(+) T lymphocytes from human blood. Proceedings of the National Academy of Sciences of the United States of America. 1999 Oct 12; 96 (21):12033-8. PMCID: PMC18407. PMID: 10518571.
25. Thomas RL, Matsko CM, Lotze MT, **Amoscato AA**. Mass spectrometric identification of increased C16 ceramide levels during apoptosis. Jounral of Biological Chemistry. 1999; 274:30580.
26. Weigel TL, Lotze MT, Kim PK, **Amoscato AA**, Luketich JD, Odoux C. Paclitaxel-induced apoptosis in non-small cell lung cancer cell lines is associated with increased caspase-3 activity. Journal of Thoracic and Cardiovascular Surgery. 2000; 119:795-803.
27. Dong X, An B, Salvucci Kierstead L, Storkus WJ, **Amoscato AA**, Salter RD. Modification of the amino terminus of a class II epitope confers resistance to degradation by CD13 on dendritic cells and enhances presentation to T cells. Journal of immunology (Baltimore, Md. : 1950). 2000 Jan 1; 164 (1):129-35. PMID: 10605003.
28.. Johnson DE, Gastman BR, Wieckowski E, Wang GQ, **Amoscato A**, Delach SM, Rabinowich H. Inhibitor of apoptosis protein hILP undergoes caspase-mediated cleavage during T lymphocyte apoptosis. Cancer research. 2000 Apr 1; 60

(7):1818-23. PMID: 10766165.
29. Leite JF, **Amoscato AA**, Cascio M. Coupled proteolytic and mass spectrometry studies indicate a novel topology for the glycine receptor. The Journal of biological chemistry. 2000 May 5; 275 (18):13683-9. PMID: 10788487.
30. Matsko CM, Hunter O, Rabinoqich H, Lotze MT, **Amoscato AA**. Alterations in mitochondrial lipids during Fas- and radiation-induced apoptosis. Biochemical and Biophysical Research Communications. 2001; 287:1112-20.
31. Lee YJ, Chen JC, **Amoscato AA**, Bennouna J, Spitz DR, Suntharalingam M, Rhee JG. Protective role of Bcl2 in metabolic oxidative stress-induced cell death. Journal of cell science. 2001 Feb; 114:677-84. PMID: 11171373.
32. Kao H, **Amoscato AA**, Ciborowski P, Finn OJ. A new strategy for tumor antigen discovery based on in vitro priming of naive T cells with dendritic cells. Clinical cancer research : an official journal of the American Association for Cancer Research. 2001 Mar; 7:773s-780s. PMID: 11300472.
33. Ostrander DB, Sparagna GC, **Amoscato AA**, McMillin JB, Dowhan W. Decreased cardiolipin synthesis corresponds with cytochrome c release in palmitate-induced cardiomyocyte apoptosis. The Journal of biological chemistry. 2001 Oct 12; 276 (41):38061-7. PMID: 11500520.
34. Kanto, T. M., P. Kalinski, O. Hunter, M. T. Lotze and **A. A. Amoscato**. 2001. Ceramide mediates tumor-induced dendritic cell apoptosis. J. Immunol. 167: 3773-84.
35. Nam SY, **Amoscato AA**, Lee YJ. Low glucose-enhanced TRAIL cytotoxicity is mediated through the ceramide-Akt-FLIP pathway. Oncogene. 2002 Jan 17; 21 (3):337-46. PMID: 11821946.
36. Odoux C, Albers A, **Amoscato AA**, Lotze MT, Wong MK. TRAIL, FasL and a blocking anti-DR5 antibody augment paclitaxel-induced apoptosis in human non-small-cell lung cancer. International journal of cancer. Journal international du cancer. 2002 Feb 1; 97 (4):458-65. PMID: 11802207.
37. Pu L, **Amoscato AA**, Bier ME, Lazo JS. Dual G1 and G2 phase inhibition by a novel, selective Cdc25 inhibitor 6-chloro-7-[corrected](2-morpholin-4-ylethylamino)-quinoline-5,8-dione. The Journal of biological chemistry. 2002 Dec 6; 277 (49):46877-85. PMID: 12356752.
38. Zhang M, Su X, Mileykovskaya E, **Amoscato AA**, Dowhan W. Cardiolipin is not required to maintain mitochondrial DNA stability or cell viability for Saccharomyces cerevisiae grown at elevated temperatures. The Journal of biological chemistry. 2003 Sep 12; 278 (37):35204-10. PMID: 12840009.
39. Eto M, Bennouna J, Hunter OC, Hershberger PA, Kanto T, Johnson CS, Lotze MT, **Amoscato AA**. C16 ceramide accumulates following androgen ablation in LNCaP prostate cancer cells. The Prostate. 2003 Sep 15; 57 (1):66-79. PMID: 12886525.
40. Lee YJ, **Amoscato AA**. TRAIL and ceramide. Vitamins and hormones. 2004; 67:229-55. PMID: 15110180.
41. Borisenko GG, Martin I, Zhao Q, **Amoscato AA**, Tyurina YY, Kagan VE. Glutathione propagates oxidative stress triggered by myeloperoxidase in HL-60 cells. Evidence for glutathionyl radical-induced peroxidation of phospholipids and cytotoxicity. The Journal of biological chemistry. 2004 May 28; 279 (22):23453-62. PMID: 15039448.
42. Kim TH, Zhao Y, Ding WX, Shin JN, He X, Seo YW, Chen J, Rabinowich H, **Amoscato AA**, Yin XM. Bid-cardiolipin interaction at mitochondrial contact site

contributes to mitochondrial cristae reorganization and cytochrome C release. Molecular biology of the cell. 2004 Jul; 15 (7):3061-72. PMCID: PMC452564. PMID: 15107464.
43. Borisenko GG, Martin I, Zhao Q, **Amoscato AA**, Kagan VE. Nitroxides scavenge myeloperoxidase-catalyzed thiyl radicals in model systems and in cells. Journal of the American Chemical Society. 2004 Aug 4; 126 (30):9221-32. PMID: 15281811.
44. Kagan VE, Borisenko GG, Tyurina YY, Tyurin VA, Jiang J, Potapovich AI, Kini V, **Amoscato AA**, Fujii Y. Oxidative lipidomics of apoptosis: redox catalytic interactions of cytochrome c with cardiolipin and phosphatidylserine. Free radical biology & medicine. 2004 Dec 15; 37 (12):1963-85. PMID: 15544916.
45. Kagan VE, Tyurin VA, Jiang J, Tyurina YY, Ritov VB, **Amoscato AA**, Osipov AN, Belikova NA, Kapralov AA, Kini V, Vlasova II, Zhao Q, Zou M, Di P, Svistunenko DA, Kurnikov IV, Borisenko GG. Cytochrome c acts as a cardiolipin oxygenase required for release of proapoptotic factors. Nature chemical biology. 2005 Sep; 1 (4):223-32. PMID: 16408039.
46. Eto M, Bennouna J, Hunter OC, Lotze MT, **Amoscato AA**. Importance of C16 ceramide accumulation during apoptosis in prostate cancer cells. International journal of urology : official journal of the Japanese Urological Association. 2006 Feb; 13 (2):148-56. PMID: 16563140.
47. Kagan VE, Tyurina YY, Bayir H, Chu CT, Kapralov AA, Vlasova II, Belikova NA, Tyurin VA, **Amoscato A**, Epperly M, Greenberger J, Dekosky S, Shvedova AA, Jiang J. The “pro-apoptotic genies” get out of mitochondria: oxidative lipidomics and redox activity of cytochrome c/cardiolipin complexes. Chemico-biological interactions. 2006 Oct 27; 163:15-28. PMID: 16797512.
48. Bayir H, Fadeel B, Palladino MJ, Witasp E, Kurnikov IV, Tyurina YY, Tyurin VA, **Amoscato AA**, Jiang J, Kochanek PM, DeKosky ST, Greenberger JS, Shvedova AA, Kagan VE. Apoptotic interactions of cytochrome c: redox flirting with anionic phospholipids within and outside of mitochondria. Biochimica et biophysica acta. 2006. 1757:648. PMID: 16740248.
49. Jiang J, Kurnikov I, Belikova NA, Xiao J, Zhao Q, **Amoscato AA**, Braslau R, Studer A, Fink MP, Greenberger JS, Wipf P, Kagan VE. Structural requirements for optimized delivery, inhibition of oxidative stress, and antiapoptotic activity of targeted nitroxides. The Journal of pharmacology and experimental therapeutics. 2007 Mar; 320 (3):1050-60. PMID: 17179468.
50. Kanai A, Zabbarova I, **Amoscato AA**, Epperly M, Wipf P. Mitochondrial targeting of radioprotectants using peptidyl conjugates. Organic and Biomolecular Chemistry. 2007; 5 (2):307-9.
51. Bayir H, Tyurin VA, Tyurina YY, Viner R, Ritov V, **Amoscato AA**, Zhao Q, Zhang XJ, Janesko-Feldman KL, Alexander H, Basova LV, Clark RS, Kochanek PM, Kagan VE. Selective early cardiolipin peroxidation after traumatic brain injury: an oxidative lipidomics analysis. Annals of neurology. 2007 Aug; 62 (2):154-69. PMID: 17685468.
52. Visus C, Ito D, **Amoscato A**, Maciejewska-Franczak M, Abdelsalem A, Dhir R, Shin DM, Donnenberg VS, Whiteside TL, DeLeo AB. Identification of human aldehyde dehydrogenase 1 family member A1 as a novel CD8+ T-cell-defined tumor antigen in squamous cell carcinoma of the head and neck. Cancer research. 2007 Nov 1; 67 (21):10538-45. PMID: 17974998.
53. Lotze MT, Zeh HJ, Rubartelli A, Sparvero LJ, **Amoscato AA,** Washburn NR,

Devera ME, Liang X, Tör M, Billiar T. The grateful dead: damage-associated molecular pattern molecules and reduction/oxidation regulate immunity. Immunological reviews. 2007 Dec; 220:60-81. PMID: 17979840.
54. Komita H, Zhao X, Taylor JL, Sparvero LJ, **Amoscato AA**, Alber S, Watkins SC, Pardee AD, Wesa AK, Storkus WJ. CD8+ T-cell responses against hemoglobin-beta prevent solid tumor growth. Cancer research. 2008 Oct 1; 68 (19):8076-84. PMCID: PMC2597529. PMID: 18829566.
55. Tyurina YY, Tyurin VA, Kapralova VI, **Amoscato AA**, Epperly MW, Greenberger JS, Kagan VE. Mass-spectrometric characterization of phospholipids and their hydroperoxide derivatives in vivo: effects of total body irradiation. Methods in molecular biology (Clifton, N.J.). 2009; 580:153-83. PMID: 19784599.
56. Sparvero LJ, Asafu-Adjei D, Kang R, Tang D, Amin N, Im J, Rutledge R, Lin B, **Amoscato AA**, Zeh HJ, Lotze MT. RAGE (Receptor for Advanced Glycation Endproducts), RAGE ligands, and their role in cancer and inflammation. Journal of translational medicine. 2009; 7:17. PMCID: PMC2666642. PMID: 19292913.
57. Bayir H, Kapralov AA, Jiang J, Huang Z, Tyurina YY, Tyurin VA, Zhao Q, Belikova NA, Vlasova II, Maeda A, Zhu J, Na HM, Mastroberardino PG, Sparvero LJ, **Amoscato AA**, Chu CT, Greenamyre JT, Kagan VE. Peroxidase mechanism of lipid-dependent cross-linking of synuclein with cytochrome C: protection against apoptosis versus delayed oxidative stress in Parkinson disease. The Journal of biological chemistry. 2009 Jun 5; 284 (23):15951-69. PMCID: PMC2708890. PMID: 19351880.
58. Liang X, Chavez AR, Schapiro NE, Loughran P, Thorne SH, **Amoscato AA**, Zeh HJ, Beer-Stolz D, Lotze MT, de Vera ME. Ethyl pyruvate administration inhibits hepatic tumor growth. Journal of leukocyte biology. 2009 Sep; 86 (3):599-607. PMID: 19584311.
59. Tyurin VA, Tyurina YY, Ritov VB, Lysytsya A, **Amoscato AA**, Kochanek PM, Hamilton R, Dekosky ST, Greenberger JS, Bayir H, Kagan VE. Oxidative lipidomics of apoptosis: quantitative assessment of phospholipid hydroperoxides in cells and tissues. Methods in molecular biology (Clifton, N.J.). 2010; 610:353-74. PMID: 20013189.
60. Tang D, Kang R, Cheh CW, Livesey KM, Liang X, Schapiro NE, Benschop R, Sparvero LJ, **Amoscato AA**, Tracey KJ, Zeh HJ, Lotze MT. HMGB1 release and redox regulates autophagy and apoptosis in cancer cells. Oncogene. 2010 Sep 23; 29 (38):5299-310. PMCID: PMC2945431. PMID: 20622903.
61. Otsuka M, Marks SA, Winnica DE, **Amoscato AA**, Pearce LL, Peterson J. Covalent modifications of hemoglobin by nitrite anion: formation kinetics and properties of nitrihemoglobin. Chemical research in toxicology. 2010 Nov 15; 23 (11):1786-95. PMID: 20961082.
62. Sparvero LJ, **Amoscato AA**, Kochanek PM, Pitt BR, Kagan VE, Bayir H. Mass-spectrometry based oxidative lipidomics and lipid imaging: applications in traumatic brain injury. Journal of neurochemistry. 2010 Dec; 115 (6):1322-36. PMCID: PMC3285274. PMID: 20950335.
63. Atkinson J, Kapralov AA, Yanamala N, Tyurina YY, **Amoscato AA**, Pearce L, Peterson J, Huang Z, Jiang J, Samhan-Arias AK, Maeda A, Feng W, Wasserloos K, Belikova NA, Tyurin VA, Wang H, Fletcher J, Wang Y, Vlasova II, Klein-Seetharaman J, Stoyanovsky DA, Bayîr H, Pitt BR, Epperly MW,7Greenberger JS, Kagan VE. A mitochondria-targeted inhibitor of cytochrome

c perxidase mitigates radiation-induced death. Nature communications. 2011; 2:497. PMID: 21988913.
64. Kim H, Bernard ME, Epperly MW, Shen H, **Amoscato AA**, Dixon TM, Doemling AS, Li S, Gao X, Wipf P, Wang H, Zhang X, Kagan VE, Greenberger JS. Amelioration of radiation esophagitis by orally administered p53/Mdm2/Mdm4 inhibitor (BEB55) or GS-nitroxide. In Vivo. 2011; 25 (6):841-8. PMID: 22021675.
65. Tyurina YY, Kisin ER, Murray A, Tyurin VA, Kapralova VI, Sparvero LJ, **Amoscato AA**, Samhan-Arias AK, Swedin L, Lahesmaa R, Fadeel B, Shvedova AA, Kagan VE. Global phospholipidomics analysis reveals selective pulmonary peroxidation profiles upon inhalation of single-walled carbon nanotubes. ACS nano. 2011 Sep 27; 5 (9):7342-53. PMCID: PMC3321726. PMID: 21800898.
66. Tyurina Y, Kisin ER, Murray A, Tyurin VA, Kapralova A, Sparvero LJ, **Amoscato AA**, Samhan Arias A, Swedin L, Lahesmaa R, Fadeel B, Shvedova AA, Kagan VE. Global phospholipidomics analysis reveals selective pulmonary peroxidation profiles upon inhalation of single-walled carbon nanotubes. ACS nano. 2011; 5 (9):7342-53.
67. Samhan-Arias AK, Ji J, Demidova OM, Sparvero LJ, Feng W, Tyurin V, Tyurina YY, Epperly MW, Shvedova AA, Greenberger JS, Bayir H, Kagan VE, **Amoscato AA**. Oxidized phospholipids as biomarkers of tissue and cell damage with a focus on cardiolipin. Biochimica et biophysica acta. 2012 Mar 23. PMID: 22464971.
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Books, Book Chapters, Monographs

. **Amoscato AA**, Brumfield AM, Herberman RB, Chambers WH. Isolation and characterization of a natural killer (NK) cell granule associated enzyme with sulfatase activity. In: Lotzvoa E, Herberman R, editors. NK cell-mediated cytotoxicity: receptors, signaling and mechanisms. Boca Raton, FL: CRC Press, 1992.

Published Abstracts

1. Biochemical Microscopy of Brain Phospholipids by Matrix assisted laser desorption ionization (MALDI)-based Mass Spectrometry Imaging (MSI)
   Detcho A. Stoyanovsky, L.J. Sparvero, **Andrew A. Amoscato**, Rong-Rong He, Simon C. Watkins, Bruce R. Pitt, Valerian E. Kagan, Hülya Bayır
   Neurotrauma Meeting 2013 (Nashville, TN).

2. MALDI-Mass Spectrometry Based Biochemical Microscopy of Cardiolipin Molecular Species in Brain Tissue. **A.A. Amoscato**, L.J. Sparvero, R.R. He, B.R. Pitt, S. Watkins, H. Bayir and V.E. Kagan
   SOT Meeting 2014 (Phoenix, AZ).

3. Schlattner U, **Amoscato AA**, Tyurina Y, Tokarska-Schlattner M, Ramirex Rios S, Boissan M, Epand RM, Klein JH, Lacombe M, Kagan VE. Mitochondrial Nm23-H4 can switch between phosphotransfer and lipid transfer activities [abstract]. Freiburg, Germany 2012.

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Surface aminopeptidase activity of rat adherent-lymphokine activated killer (A-LAK) cells. FASEB.

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Immunomodulation by Chemically Defined Adjuvants.

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RESEARCH INTERESTS

Reseach Interests: Mass spectrometry of lipids (lipidomics), peptides, proteins (proteomics) and small molecules (metabolomics); imaging mass spectrometry; lipid-protein/protein-protein interactions as assessed by mass spectrometry; lipid alterations and phospholipid signaling during apoptosis and autophagy; mechanisms of apoptosis and autophagy; the role of sphingolipids in radiation-induced apoptosis; the role of sphingolipids in androgen ablation induced apoptosis of prostate cancer cells; the role of lipids and lipid signaling in endothelial cell apoptosis; the role of lipid DAMPS in inflammation and cancer; mitochondrial and redox biochemistry.

OTHER SCHOLARLY ACTIVITIES

Editorial Board(s)

Manuscript Reviewer

Expert Review of Proteomics
Journal and Cancer Chemotherapy and Pharmacology
Journal of Biochemical Pharmacology
Journal of Biological Chemistry
The Journal of Immunology
Biochemistry
Cellular Immunology
Biochimica et Biophysica Acta
Melanoma Research
Journal of Cellular Physiology
Free Radical Biology and Medicine
Kidney International
Nature Chemistry
Chemistry and Physics of Lipids

Grant Reviewer

Postdoctoral Review Committee, University of Pittsburgh Cancer Institute
Grant Reviewer, Allegheny-Singer Research Institute
Grant Reviewer, Barth Syndrome Foundation

PATENTS

1. Deleo AB, Visus C, Ito D, Amoscato AA, Whiteside TL Identification of human aldehyde dehyrogenase 1 family member A1 as a novel CD8+ Tcell-defined tumor antigen.

INVITED PRESENTATIONS

. Jiang J, Belikova NA, Xiao J, Zhao Q, Kurnikov IV, Amoscato AA, Fink MP, Wipf P, Greenberger JS, Kagan VE. Mitochondria Targeted Hemi-Gramicidin S Conjugated Nitroxide Inhibited Irradiation Induced Apoptosis and Cardiolipin Oxidation in Mouse Embryonic Cells. Poster presented at: 46th Annual Meeting of the Society of Toxicology; 2007 Mar 25-29; Charlotte, NC.
Amoscato AA. Radiation-Induced apoptosis: mitochondrial mechanisms and strategies to enhance therapy. Presented at: Regional Consortium for the Biological Therapy of Cancer. 7th Annual Meeting,; 2004 Feb.

SERVICE

Service to Internal Organizations

Service to External Organizations

External Committees

Other

Dr. Amoscato has a wealth of experience in lipidomics, proteomics and metabolomics and their applications. In addition, Dr. Amoscato has extensive experience in the following mass spectrometry platforms: triple quadrupole, ion trap (including linear ion-traps), Q-TOF, MALDI-TOF/TOF (including use in imaging), quadrupole/orbitrap mass spectrometers and gas chromatography/mass spectrometry with a variety of LC interfaces. He has extensive experience in hardware repair for a variety of these MS platforms and has extensive experience in LC and nano-LC applications and an excellent working knowledge of Xcalibur and Masslynx mass spectrometry software.

INTERACTIONS WITH THE UNIVERSITY OF PITTSBURGH FACULTY INVOLVING MASS SPECTROMETRY

Dr. Amoscato's past research in mass spectrometry involved extensive collaborations between Dr. Amoscato's lab and the University of Pittsburgh/UPCI research community.

- Dr. Joel Greenberger, Chairman-Department of Radiation Oncology, University of Pittsburgh School of Medicine and the Hillman Cancer Center (UPCI). One aspect of Dr. Greenberger's research involves targeting the critical cardiolipin/cytochrome c interactions in the mitochondria in a strategy for combating cardiolipin oxidation in new drug discovery and dietary issue. Dr. Amoscato's lab will utilize electrospray ionization mass spectrometric (ESI-MS) technology to structurally analyze cardiolipin and its oxidation products.

- Dr. Xiao-Ming Yin, formerly of the Department of Pathology, University of Pittsburgh School of Medicine. In conjunction with Dr. Amoscato and the Mass Spectrometry Facility, Dr. Yin and Dr. Amoscato were able to determine that the pro-apoptotic molecule Bid was able to interact with cardiolipin species on intact mitochondria utilizing electrospray ionization mass spectrometry (ESI-MS).

- Dr. Reza Zarnegar, Department of Pathology, University of Pittsburgh School of Medicine. Dr. Zarnegar's research interests lie in understanding the cellular and molecular biology of a polypeptide growth factor called Hepatocyte Growth Factor (HGF). The focus of his lab is to dissect the regulatory regions of the HGF and Met (the HGF receptor) genes. In conjunction with Dr. Amoscato's lab and the Mass Spectrometry facility, Dr. Zarnegar is mapping potential caspase cleavage sites (in vitro) in the HGF polypeptide. These results will now be applied to cell lysates and will utilize MALDI-TOF mass spectrometry.

- Dr. Robert Bridges, formerly of the Department of Cell Biology, University of Pittsburgh School of Medicine. One aspect of Dr. Bridges's research involves understanding the chemistry and biology of the serine protease prostasin. In conjunction with Dr. Amoscato's lab, they have been able to determine the presence or absence of the light chain of the protease in native prostasin and in various mutants, utilizing on-plate reduction techniques and MALDI-TOF mass spectrometry.

- Dr. David Vorp, Department of Surgery and Bioengineering, University of Pittsburgh School of Medicine. Dr. Vorp's laboratory if focused on studying the effects of biomechanical forces in vascular disease. In conjunction with Dr. Amoscato's lab and the Mass Spectrometry Facility, they are taking a proteomics approach in identifying proteins that are up-regulated in response to various biomechanical forces. Dr. Amoscato's lab is employing both MALDI-TOF and ESI-MS mass spectrometry for identification and sequencing of proteins from gels.

- Dr. Albert DeLeo, formerly of the Department of Pathology, University of Pittsburgh School of Medicine and The Hillman Cancer Center (UPCI). One main area of Dr. DeLeo's research involves the identification of tumor associated antigens. In conjunction with Dr. Amoscato's lab and the Mass Spectrometry Facility, they have been able to identify and sequence tumor-associated peptides utilizing a microcapillary hplc tandem mass spectrometry approach.

- Dr. Eric Weiner, Department of Radiology/UPCI, Hillman Cancer Center. Dr. Weiner's lab has been utilizing Dr. Amoscato's Mass Spectrometry Facility for structural analysis of novel compounds for use in radiological studies. Both ESI-MS and MALDI-TOF mass spectrometry have been applied for these studies.

- Dr. John Lazo, formerly of the UPCI Drug Discovery Group, Department of Pharmacology, University of Pittsburgh School of Medicine and The Hillman Cancer Center. One area of Dr. Lazo's research involves the design of novel inhibitors of cdc kinases. In conjunction with the Mass Spectrometry Facility and Dr. Amoscato's lab, they have been able to identify the inhibitor's binding site on the cdc kinase protein using a combination of MALDI-TOF and ESI-MS mass spectrometry.

- Dr. Valerian Kagan, Vice Chairman, Department of Environmental and Occupational Health, Graduate School of Public Health. One area of Dr. Kagan's research involves anitoxidant and prooxidant signaling in apoptosis and its relation to lipid oxidation. In conjunction with Dr. Amoscato's lab and the Mass Spectrometry Facility, they have been able to structurally characterize anti and pro-oxidant compounds as well as lipid oxidation products.

- Dr. Y. Lee, Department of Surgery, University of Pittsburgh School of Medicine/UPCI. In conjunction with Dr. Amoscato's lab and The Mass Spectrometry Facility, Dr. Lee's lab has been able to investigate the role of ceramide in metabolic oxidative stress, especially as it relates to TRAIL. These studies utilized ESI-MS to quantitate ceramide levels as developed in the mass spectrometry facility.

- Dr. Michael Lotze, Departments of Surgery and Bioengineering and UPCI. In conjunction with Dr. Amoscato's lab and the Mass Spectrometry Facility, they will be studying acetylated and non-acetylated forms of the protein HMGB1. A MALDI-TOF and ESI-MS approach will be utilized. Purification of HMGB1 from various sources will also be employed.

- Dr. K. Irani, Pitt Cardiovascular Institute. In conjunction with Dr. Amoscato's lab and the Mass Spectrometry facility, they will analyze the specific residues within the eNOS protein that become acetylated and de-acetylated which may influence activity of the synthase.

- Dr. Walter Storkus (Dermatology). In conjunction with Dr. Amoscato's lab, they have been identifying class I peptide epitopes from tumor cells by employing sequence analysis using microcapillary hplc tandem mass spectrometry.

- Dr. Michael Casio (Molecular Genetics and Biochemistry). In conjunction with Dr. Amoscato's lab, they have applied a mass spectrometric/proteomic approach to the study of the glycine receptor.

- Dr. Russ Salter (Dept. of Immunology and Pathology). Part of Dr. Salter's research involves the study of the presentation of class I and class II restricted antigens by dendritic cells to T-cells. In conjunction with Dr. Amoscato's lab they performed a mass spectrometric approach to determine the degradation of exogenously supplied peptide antigens by dendritic cells and by B cells.

- Dr. Gary Silverman (Magee Women's Research Institute). Proteomic analysis of Serpin-like proteins from C. elegans. This project involves the proteomic analysis of proteins from silver-stained and Coomassie-stained gels.

- Dr. Olivera Finn (Department of Immunology). Projects have involved the sequence analysis of MHC derived peptides by microcapillary tandem mass spectrometry.

- Dr. Michael Parniak (Medicine/Molecular Genetics and Biochemistry). In conjunction with Dr. Amoscato's lab, projects involve the mass spectral detection and quantitation of a class of organic compounds that inhibit reverse-transcriptase activity.

- Dr. Hannah Rabionowich (UPCI/Pathology). Projects with Dr. Rabionowich have involved detection of specific enzymatic cleavage sites on a variety of pro-apoptotic proteins. A mass spectrometric/proteomic approach has been taken.

- Dr. M. Zeidel (formerly fo the Dept. of Medicine, University of Pittsburgh). In conjunction with Dr. Amoscato's lab they have performed lipid analysis on a variety of cell types.

- Dr. Joseph Glorioso, Chairman, Department of Molecular Genetics and Biochemistry. A number of projects with Dr. Glorioso's lab have involved protein sequence analysis of a variety of proteins from silver and Coomassie stained gels.

- Dr. Anthony Kanai (Dept. of Medicine). In conjunction with Dr. Amoscato's lab, they have performed mass spectrometric analysis of mitochondrial-targeted peptides.

- Dr. M. Epperly (Dept. of Radiation Oncology/UPCI, Hillman Cancer Center). They have looked at quantitative uptake of a variety of radiation mitigating compounds in various sub-cellular compartments. They have taken and quantitative mass spectrometric approach for these studies.

- Dr. Andrea Gambotto (Dept. of Medicine/Surgery/UPCI). Dr. Gambotto's lab is interested in looking at proteomic profiling of cells infected with adenovirus. He is doing this in conjunction with the mass spectrometry facility.

- Dr. Theresa Whiteside (Dept. of Pathology/UPCI). In conjunction with Dr. Amoscato's lab, they have been involved in the identification of tumor associated peptide epitopes utilizing tandem mass spectrometry for protein sequencing.

- Dr. R Delude (Dept. of Critical Care Medicine). His projects involved protein identification from a variety of gels. Protein id was accomplished through mass spectrometric methods of analysis.

- Dr. Alan Russell (formerly of the McGowan Institute for Regenerative Medicine). In conjunction with Dr. Amoscato's lab and the Mass Spectrometry Facility, they have been taking a proteomic approach to investigate the sites of polyethylene glycol modification (PEGylation) of matrix mettaloproteases.

- Dr. M. Trakselis, University of Pittsburgh, Department of Chemistry. Dr. Amoscato's lab had aided in the identification of DNA polymerases from SDS gels by mass spectrometry.

- Dr. J. Moser, formerly of the University of Pittsburgh, Department of Surgery/UPCI. A collaboration with Dr. Amoscato's lab is underway to investigate lipid profiles of tissue samples (lever/gallbladder) by mass spectrometry from rats that are fed a high cholesterol diet and are either prone to gallstone formation or resistant to gallstone formation. The results will be compared to a normal group.

- Dr. Charles Brown, University of Pittsburgh. Department of Surgery/UPCI**.** Dr. Amoscato and his lab have been providing the mass spectrometric analysis of various dendrimers that are being utilized in Dr. Brown's lab.

- Dr. C. McCloskey, University of Pittsburgh Department of Surgery. Dr. Amoscato's lab has been providing mass spectrometric analysis of lipids from various tissues from obese and lean animals