CURRICULUM VITAE

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EDUCATION AND TRAINING

Undergraduate

MV Lomonosov Moscow State University Russia	B.S.	1967	Biochemistry, Biophysics
MV Lomonosov Moscow State University Russia	M.S.	1968	Biochemistry, Biophysics

Graduate

MV Lomonosov Moscow State University Russia	Ph.D.	1972	Biochemistry, Biophysics
USSR Academy of Sciences, Moscow, Russia	D.Sc.	1981	Biochemistry, Biophysics

APPOINTMENTS AND POSITIONS

Academic

1968-1969	Research Associate	MV Lomonosov Moscow State University
1969-1970	Research Associate	Institute of Oncology, Moscow
1970-1972	Research Associate	MV Lomonosov Moscow State University Department of Biophysics
	Assistant Research Professor	MV Lomonosov Moscow State University Department of Biochemistry
1977-1983	Associate Research Professor	MV Lomonosov Moscow State University Department of Biochemistry
1983-1989	Head, Research Professor	Institute of Physiology, Bulgarian Academy of Sciences, Bulgaria, Membrane, Biostabilization Group
1989-1992	Associate Research Biochemist	University of California, Berkeley Department of Molecular and Cell Biology
1989-1992	Visiting Scientist	Lawrence Berkeley Laboratory, Berkeley

1992-1996	Associate Professor	University of Pittsburgh, Department of Environmental and Occupational Health
1996-2001	Associate Professor (tenured)	University of Pittsburgh, Department of Environmental and Occupational Health
1992-Present	Member	University of Pittsburgh Cancer Institute
1997-2003	Associate Professor	University of Pittsburgh, Department of Pharmacology, Pittsburgh, PA
1999-2002	Associate Investigator	Magee-Womens Research Institute, Pittsburgh, PA
1999-2012	Adjunct Professor	Division of Life Sciences, King's College, University of London, UK
2000-Present	Vice-Chairman	Department of Environmental and Occupational Health University of Pittsburgh
2001-Present	Professor	Department of Environmental and Occupational Health
2002-Present	Senior Investigator	Magee-Womens Research Institute, Pittsburgh, PA
2003-Present	Professor	Department of Pharmacology, University of Pittsburgh
2004-Present	Director	Center for Free Radical and Antioxidant Health, University of Pittsburgh
2005-Present	Professor	School of Medicine, Department of Department of Pharmacology and Chemical Biology, University of Pittbsurgh
2006-Present	Member	University of Pittsburgh Nanotechnology Institute
2006-Present	Member	University of Pittsburgh Drug Discovery Institute
2007-2013	Adjunct Foreign Professor	Institute of Environmental Medicine, Karolinska Institute, Stockholm, Sweden
2007-Present	Professor	Department of Radiation Oncology, School of Medicine, University of Pittsburgh
2010-Present	Professor	Department of Chemistry, University of Pittsburgh
2010-Present	Professor	Taipei Medical University, Taiwan
2010-Present	Professor	Russian State Medical University, Moscow, Russia
2010-Present	Foreign Professor	MV Lomonosov Moscow State University Moscow, Russia

2011-Present	Member Faculty	McGowan Institute for Regenerative Medicine, UPMC, University of Pittsburgh
2013-2014	Fulbright Visiting Chair	Environmental Sciences, McMaster University, Hamilton, Ontario, Canada
2014-2015	Sackler Lecturer	University of Tel-Aviv, Israel

ADDITIONAL TEMPORARY APPOINTMENTS

1979, 1981, 1982	Visiting Professor	Irkutsk State University, Irkutsk (Siberia) , USSR
1981	Visiting Professor	University of Leipzig, Germany
1987	Visiting Research	King's College, London
1987, 1988, 1990	Temporary Advisor	World Health Organization, Geneva
1988	Visiting Scientist	University of California, Berkley

HONORS

1983	State Prize of the USSR for Science (In the former USSR, the top 10-15 programs in Science were annually awarded this prize)
2012	Fellow, The American Association for the Advancement of Science

PUBLICATIONS

BOOKS IN ENGLISH:

Kagan, V.E. Lipid peroxidation in biomembranes, CRC Press, Boca Raton, Florida, 1-184, 1988.

Quinn, P.J., Kagan, V.E. (Eds). Subcellular Biochemistry: fat-soluble vitamins. Plenum Publishing Corp., N.Y., London, 1998.

Kagan, V.E., Quinn, P.J. (Eds). Coenzyme Q: molecular mechanisms in health and disease. CRC Press, Boca Raton, 2001.

Quinn, P.J., Kagan, V.E. (Eds). Phospholipid metabolism in apoptosis. Kluwer Academic/Plenum Publishers Corp., N.Y., Boston, Dordrecht, London, Moscow, 2002.

PEER-REVIEWED PAPERS IN THE US AND INTERNATIONAL JOURNALS:

1. Kagan VE, Shvedova AA, Novikov KN, and Kozlov YP. Light-induced free radical oxidation of membrane lipids in photoreceptor of frog retina. Biochim. Biophys. Acta. 1973; 330:76-79.

2. Krasnovsky AA, and Kagan VE. Photosensitization and quenching of singlet oxygen by pigments and lipids of photoreceptor cells of the retina. FEBS Lett. 1979; 108(1):152-154.

3. Tyurin VA, Kagan VE, Shukolyukov SA, Klaan NK, Novikov KN, Azizova OA. Thermal stability of rhodopsin and lipid-protein interactions in the photoreceptor membranes of homoiothermic and poikilothermic animals. J. Therm. Biol. 1979; 4:203-208.

4. Shvedova AA, Sidorov AS, Novikov KN, Galuschenko IV, Kagan VE. Lipid peroxidation and

electric activity of the retina. Vision Res. 1979; 19:49-55.

5. Meerson FZ, Kagan VE, Kozlov YP, Belkina LM, Arkhipenko YV. Role of lipid peroxidation in pathogenesis of ischemic damage and antioxidant protection of the heart. Basic Res. Cardiol. 1982; 77:465-485.

6. Shvedova AA, Alekseeva OM, Kuliev IY, Muranov KO, Kozlov YP, Kagan VE. Damage of photoreceptor membrane lipids and proteins induced by photosensitized oxidation. Curr. Eye Res. 1983; 2,10:683-690.

7. Krasnovsky AA, Kagan VE, Minin AA. Quenching of single oxygen luminescence by fatty acids and lipids. Contribution of physical and chemical mechanisms. FEBS Lett. 1983; 155(2):233-236.

8. Erin AN, Skrypin MM, Tabidze LV, Kagan VE. Formation of alpha-tocopherol complexes with fatty acids. A hypothetical mechanisms of stabilization of biomembranes by vitamin E. Biochim. Biophys. Acta. 1984; 774:96-102.

9. Erin AN, Spirin MM, Tabidze LV, Kagan,VE. Formation of alpha-tocopherol complexes with fatty acids. Nature of complexes. Biochim. Biophys. Acta. 1985; 815:209-214.

10. Kagan VE, Serbinova EA, Novikov KN, Ritov VB, Kozlov YP, Stoytchev TS. Toxic and protective effects of antioxidants in biomembranes. Arch. Toxicol. (Suppl.), 1986; 9:302-305.

11. Kagan VE, Quinn PJ. The interaction of alpha-tocopherol and homologues with shorter hydrocarbon chains with phospholipid bilayer dispersions. A fluorescence probe study. Eur. J. Biochem. 1988; 171(3):661-667.

12. Baldenkov GN, Serbinova EA, Bakalova RA, Tkachuk VA, Kagan VE, Stoychev TS. The role of secondary messengers in the regulation of lipid peroxidation in rat liver microsomes. Free Rad. Res. Communs. 1988; 4(5):277-281.

13. Kagan VE, Bakalova RA, Rangelova DS, Stoyanovsky DA, Koynova GM, Wolinsky I. Oxidative stress leads to inhibition of calcium transport by sarcoplasmic reticulum in skeletal muscle. Proc. Soc. Exp. Biol. Med. 1989; 190:365-368.

14. Serbinova EA, Kadiiska MB, Bakalova RA, Koynova GM, Stoyanovsky DA, Karakashev PC, Stoytchev TS, Wolinsky I, Kagan VE. Lipid peroxidation activation and cytochrome P-450 decrease in rat liver endoplasmic reticulum under oxidative stress. Toxicol. Lett. 1989; 47:119-123.

15. Kagan VE, Bakalova RA, Serbinova EA, Stoytchev TS. Fluorescent measurements of incorporated and hydrolysis of tocopherol and its esters in biomembranes. Meth. Enzymol. 1989; 186:355-367.

16. Packer L, Maguire JJ, Melhorn RJ, Serbinova EA, Kagan VE. Mitochondria and microsomal membranes have a free radical reductase activity that prevents chromanoxyl radical accumulation. Biochem. Biophys. Res. Communs. 1989; 159(1):229-235.

17. Stoyanovsky DA, Kagan VE, Packer L. Iron binding to □□tocopherol-containing phospholipid liposomes. Biochem. Biophys. Res. Commus. 1989; 160(2):834-838.

18. Kagan VE. Tocopherol stabilizers membrane against phospholipases A, free fatty acids and lysophospholipids. Ann. N.Y. Acad. Sci. 1989; 570:121-135.

19. Kagan VE, Serbinova EA, Packer L. Recycling and antioxidant activity of tocopherol homologues

of differing hydrocarbon chain length in liver microsomes. Arch. Biochem. Biophys. 1990; 282(2):221-225.

20. Kagan VE, Bakalova RA, Zhelev ZhZh, Rangelova D.A, Serbinova EA, Tyurin VA, Denisova NK, Packer L. Intermembrane transfer and antioxidant action of alpha-tocopherol in liposomes. Arch. Biochem. Biophys. 1990; 280(1):147-152.

21. Kagan VE, Serbinova EA, Packer L. Generation and recycling of radicals from phenolic antioxidants. Arch. Biochem. Biophys. 1990; 280(1):33-39.

22. Kagan VE, Serbinova EA, Koynova EA, Kitanova SA, Tyurin VA, Stoytchev TS, Quinn PJ, Packer L. Antioxidant action of ubiquinol homologues with different isoprenoid chain length in biomembranes. Free Rad. Biol. Med. 1990; 9:117-126.

23. Kagan VE, Serbinova EA, Packer L. Antioxidant effects of ubuquinones in microsomes and mitochondria are mediated by tocopherol recycling. Biochem. Biophys. Res. Communs. 1990; 169(3):851-857.

24. Kagan VE, Serbinova EA, Bakalova RA, Stoytchev TS, Erin AN, Prilipko LL, Evstigneeva RP. Mechanisms of stabilization of biomembranes by alpha-tocopherol: the role of the hydrocarbon chain in the inhibition of lipid peroxidation. Biochem. Pharamacol. 1990; 40(11):2403-2413.

25. Konishi T, Kagan VE, Matusg, S, Packer L. UV induced oxy-and chromanoxyl radicals in microsomes by a new photosensitive organic hydroperoxide, N, N^{1}-bis(2-hydroperoxy-2-methoxyethyl)-1,4,5,8-naphtalene-tetra-carboxylic-diimide (NP-III). Biochem. Biophys. Res. Comm. 1991; 175(1):129-133.

26. Serbinova EA, Kagan VE, Han D, Packer L. Intramembrane mobility and recycling in antioxidant properties of alpha-tocotrienol. Free Rad. Biol. Med. 1991; 10:263-275.

27. Packer L, Valenza M, Serbinova EA, Starke-Reed P, Frost K, Kagan VE. Free radical scavenging is involved in the protective effect of 1-propionyl-carnitine against ischemia-reperfusing injury of the heart. Arch. Biochem. Biophys. 1991; 288(2):533-537.

28. Kagan VE, Freisleben HJ, Tsuchiya M, Forte T, Packer L. Generation of probucol radicals and their reduction by ascorbate and dihydrolipoic acid in human low density lipoproteins. Free Radical Res. Commun. 1991; 15:273-284.

29. Maguire JJ, Kagan VE, Serbinova EA, Ackrell BA, Packer L. Succinate-ubiquinone reductase-linked recycling of alpha-tocopherol in reconstituted systems and mitochondria: requirement for reduced ubiquinone. Arch. Biochem. Biophys. 1992; 229:47-53.

30. Kagan VE, Witt E, Goldman R, Scita G, Packer L. Ultraviolet light-induced generation of vitamin E radicals and their recycling. A possible photosensitizing effect of vitamin E in skin. Free Radical Res. Commun. 1992; 16:51-64.

31. Kagan VE, Serbinova EA, Forte T, Scita G, Packer L. Recycling of vitamin E in human low density lipoproteins. J. Lipid Res. 1992; 33:385-397.

32. Reznick AZ, Kagan VE, Ramsey R, Tsuchiya M, Khwaja S, Serbinova EA, Packer L. Antiradical effects in L-propionyl carnitine protection of the heart against ischemia-reperfusion injury; the possible role of iron chelation. Arch. Biochem. Biophys. 1992; 296:394-401.

33. Kagan VE, Serbinova EA, Safadi A, Catudioc J, Packer L. NADPH-dependent inhibition of lipid peroxidation in rat liver microsomes. Biochem. Biophys. Res. Commun. 1992; 86:74-80.

34. Kagan VE, Shvedova A, Serbinova EA, Khan S, Swansson C, Powell R, Packer L. Dihydrolipoic acid - a universal antioxidant both in the membrane and in the aqueous phase. Reduction of peroxyl, ascorbyl and chromanoxyl radicals. Biochem. Pharmacol. 1992; 44:1637-1649.

35. Suzuki YJ, Tsuchiya M, Safadi A, Kagan VE, Packer L. Antioxidant properties of nitecapone (OR-462). Free Radical Biol. Med. 1992; 13:517-525.

36. Maguire JJ, Kagan VE, Packer L. Electron transport between cytochrome c and alpha-tocopherol. Biochem. Biophys. Res. Communs. 1992; 188:190-197.

37. Tsuchiya M. Scita G. Freisleben HJ. Kagan VE. Packer L. Antioxidant radical-scavenging activity of carotenoids and retinoids compared to alpha-tocopherol. Meth. Enzymol. 1992; 213:460-72.

38. Kagan VE, Tsuchiya M, Serbinova E, Packer L, Sies H. Interaction of the pyridoindole stobadine with peroxyl, superoxide and chromanoxyl radicals. Biochem. Pharmacol. 1993; 45:393-400.

39. Chatelain E, Boscoboinik DO, Bartoli GM, Kagan VE, Gey FK, Packer L, Azzi A. Inhibition of smooth muscle cell proliferation and protein kinase C activity by tocopherols and tocotrienols. Biochim. Biophys. Acta. 1993; 1176:83-89.

40. Suzuki Y, Tsuchiya M, Wassall S, Choo Y, Govil G, Kagan V, Packer L. Structural and dynamic membrane properties of a-tocopherol and a-tocotrienol: implication to the molecular mechanism of their antioxidant potency. Biochemistry. 1993; 32:10692-10699.

41. Stoyanovsky D, Yalowich J, Gantchev T, Kagan V. Tyrosinase-induced phenoxyl radicals of Etoposide (VP-16): interaction with reductants in model systems, K562 leukemic cell and nuclear homogenates. Free Radical Res. Communs. 1993; 19:371-386.

42. Gantchev TG, van Lier JE, Stoyanovsky DA, Yalowich JC, Kagan VE. Interactions of the phenoxyl radical of an antitumor drug, etoposide (VP-16), with reductants in solution and in cell and nuclear homogenates. ESR and HPLC measurements. Meth. Enzymol. 1994; 234:643-654.

43. Kagan VE, Packer L. Light-induced generation of the vitamin E radicals: a new method to assess vitamin E regeneration. Meth. Enzymol 1994; 234:316-320.

44. Kagan VE, Serbinova EA, Stoyanovsky DA, Khwaja S, Packer L. Assay of ubiquinones and ubiquinols as antioxidants. Meth. Enzymol. 1994; 234:343-354.

45. Tsuchiya M, Kagan VE, Freisleben HJ, Manabe M, Packer L. Antioxidant activity of □-tocopherol, β-carotene and ubiquinol in membranes: cis-parinaric acid-incorporated liposomes. Meth.Enzymol. 1994; 234:371-383.

46. Stoyanovsky DA, Salama G, Kagan VE. Ascorbate/iron activates Ca^{2+}-release channels of skeletal sarcoplasmic reticulum vesicles reconstituted in lipid bilayers. Arch. Biochem.Biophys. 1994; 308:214-221.

47. Schwarz MA, Lazo JS, Yalowich JC, Reynolds I, Kagan VE, Tyurin VA, Kim YM, Watkins S, Pitt B. Cytoplasmic metallothionein overexpression protects NIH 3T3 cells from tert-butyl hydroperoxide toxicity. J. Biol. Chem. 1994; 269:15238-15243.

48. Avrova NF, Tyurin VA. Tyurina YY, Kagan VE. Gangliosides in postischemic cellular dysfunctions. Ann.NY Acad.Sci. 1994; 723:353-355.

49. Kagan VE, Yalowich JC, Day BW, Goldman RR, Stoyanovsky DA. Ascorbate is the primary reductant of the phenoxyl radical of etoposide (VP-16) in the presence of thiols both in cell homogenates and in model systems. Biochemistry. 1994; 33:9651-9660.

50. Engelman DT, Watanabe M, Engelman RM, Rousou JA, Kisin ER, Kagan VE, Das DK. Hypoxic preconditioning preserves antioxidant reserve and prevents calcium overload in the ischemic/reperfused working heart. Cardiovasc. Res. 1995; 29:133-140.

51. Tyurina YY, Tyurin VA, Yalowich JC, Quinn PJ, Claycamp HG, Schor NF, Pitt BR, Kagan VE. Phenoxyl radicals of etoposide (VP-16) can directly oxidize intracellular thiols: protective versus damaging effects of phenolic antioxidants. Toxicol. Appl. Pharmacol. 1995; 131: 277-288.

52. Menshikova EV, Ritov VB, Shvedova AA, Elsayed NM, Karol MH, Kagan VE. Pulmonary microsomes contain a Ca^{2+}-transport system sensitive to oxidative stress. Biochim. Biophys. Acta.995; 1228:165-174.

53. Stoyanovsky DA, Goldman R, Organisciak DT, Darrow RM, Kagan VE. Endogenous ascorbate regenerates vitamin E in the retina directly and in combination with dihydrolipoic acid. Curr. Eye Res. 1995; 14:181-189.

54. Stoyanovsky DA, Goldman R, Claycamp HG, Kagan VE. Phenoxyl radical-induced thiol-dependent generation of reactive oxygen species: implications for benzene toxicity. Arch.Biochem.Biophys. 1995; 317:315-323.

55. Shvedova AA, Kisin ER, Kagan VE, Karol MH. Increased lipid peroxidation and decreased antioxidants in lungs of guinea pigs following an allergic pulmonary response. Toxicol.Appl.Pharmacol. 1995; 132:72-81.

56. Goldman R, Stoyanovsky DA, Day BW, Kagan VE. Reduction of phenoxyl radicals by thioredoxin results in selective oxidation of its SH-groups to disulfides. Biochemistry. 1995; 34: 4765-4772.

57. Shvedova AA, Menshikova EV, Ritov VB, Kagan VE, Karol MH. Murine pulmonary Ca^{2+}-transport system activated by allergic immune response retains sensitivity to oxidative stress. Exp. Lung Res. 1995; 21:743-769.

58. Gorbunov NV, Osipov AN, Day BW, Zayas-Rivera B, Kagan VE, Elsayed NM. Reduction of ferrylmyoglobin and ferrylhemoglobin by nitric oxide: a protective mechanism against ferryl hemoprotein-induced oxidations. Biochemistry. 1995; 34:6689-6699.

59. Jones DP, Kagan VE, Aust SD, Reed DJ, Omaye ST. Impact of nutrients on cellular lipid peroxidation and antioxidant defense system. Fund.Appl. Toxicol. 1995; 26(1):1-7.

60. Ritov VB, Goldman R, Stoyanovsky DA, Menshikova EV, Kagan VE. Antioxidant paradoxes of phenolic compounds: peroxyl radical scavenger and lipid antioxidant, Etoposide (VP-16), inhibits sarcoplasmic reticulum Ca^{2+}-ATPase via thiol oxidation by its phenoxyl radical. Arch. Biochem. Biophys. 1995; 321:140-152.

61. Maulik N, Watanabe M, Engelman D, Engelman RM, Kagan VE, Kisin E, Tyurin VA, Cordis GA,

Das DK. Myocardial adaptation to ischemia by oxidative stress induced by endotoxin. Am. J. Physiol., Cell Physiol. 1995; 38:907-916.

62. Stoyanovsky DA, Osipov AN, Quinn PJ, Kagan VE. Ubiquinone-dependent recycling of vitamin E radicals by superoxide. Arch. Biochem. Biophys. 1995; 323:343-351.

63. Kurella EG, Osipov AN, Goldman R, Boldyrev AA, Kagan VE. Inhibition of Na,K-ATPase by phenoxyl radicals of etoposide (VP-16): role of sulfhydryls oxidation. Biochim. Biophys. Acta. 1995; 1232:52-58.

64. Elsayed NM, Tyurina YY, Tyurin VA, Menshikova EV, Kisin ER, Kagan VE. Antioxidant depletion, lipid peroxidation, and impairment of calcium transport induced by air blast overpressure in rat lungs. Exp. Lung Res. 1996; 22:179-200.

65. Yalowich JC, Tyurina YY, Tyurin VA, Allan WP, Kagan VE. Reduction of phenoxyl radicals of the antitumor agent, Etoposide (VP-16) by glutathione and protein sulfhydryls in human leukemia cells: implications for cytotoxicity. *Toxicology In Vitro.* 1996; 10:59-68.

66. Winer RI, Novikov KN, Ritov VB, Kagan V., Alterman MA. Effect of different solubilizing agents on the agrregation state and catalytic activity of two purified rabbit cytochrome P450 isozymes, CYP1A2(LM4) and CYP2B4(LM2). Biochem. Biophys. Res. Commun. 1996; 217:886-891.

67. Gorbunov NV, Osipov AN, Sweetland MA, Day BW, Elsayed NM, Kagan VE. NO redox paradox: direct oxidation of a-tocopherol and a-tocopherol-mediated oxidation of ascorbate. Biochem. Biophys. Res. Commun. 1996; 219:835-841.

68. Stoyanovsky DA, Goldman R, Jonnalagadda SS, Day BW, Claycamp HG, Kagan VE. Detection and characterization of the EPR-silent glutathionyl-DMPO adduct derived from redox-cycling of phenoxyl radicals in model systems and HL-60 cells. Arch. Biochem. Biophys. 1996; 330:3-11.

69. Osipov AN, Gorbunov NV, Day BW, Elsayed NM, Kagan VE. Electron spin resonance and mass spectral analysis of interactions of ferrylhemoglobin and ferrylmyoglobin with nitric oxide. Meth. Enzymol. 1996; 268:193-203.

70. Hubel CA, Kozlov AV, Kagan VE, Evans RW, Davidge ST, McLaughlin MK, Roberts JM. Decreased transferrin and increased transferrin saturation in sera of women with preeclampsia: implications for oxidative stress. Amer. J. Obst. Gynecol. 1996; 175:672-700.

71. Purpura P, Westman L, Will P, Eidelman A, Kagan VE, Osipov AN, Schor NF. Adjunctive treatment of murine neuroblastoma with 6-hydroxydopamine and TEMPOL. Cancer Res. 1996; 56: 2336-2342.

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73. Ritov VB, Menshikova EV, Goldman R, Kagan VE. Direct oxidation of poly-unsaturated *cis*-parinaric fatty acid by phenoxyl radicals generated by peroxidase/ H_2O_2 in model systems and in HL-60 cells. Toxicol. Lett. 1996; 87:121-129.

74. Ritov VB, Banni S, Yalowich JC, Day BW, Claycamp HG, Corongiu FP, Kagan VE. Non-random peroxidation of different classes of membrane phospholipids in live cells detected by metabolically integrated *cis*-parinaric acid. Biochim. Biophys. Acta. 1996; 1283:127-140.

75. Muldoon MF, Kritchevsky SB, Evans RW, Kagan VE. Serum total antioxidant activity in relative hypo- and hypercholesterolemia. Free Radical Res. 1996; 25:239-245.

76. Maulik N, Engelman DT, Watanabe M, Engelman RM., Rousou JA, Flack JA, Deaton DW, Gorbunov NV, Elsayed NM, Kagan VE, Das DK. Nitric oxide/carbon monoxide: a molecular switch for myocardial preservation during ischemia. Circulation. 1996; 94: II-398-II406.

77. Gorbunov NV, Elsayed NM, Kisin ER, Kozlov AV, Kagan VE. Air blast overpressure induces oxidative stress in rat lungs: interplay between hemoglobin, antioxidants and lipid peroxidation. Am. J. Physiol.: Lung Cell. Molec. Physiol. 1997; 16(2):L 320-L 334.

78. Fabisiak JP, Kagan VE, Ritov VB, Johnson DE, Lazo JS. Bcl-2 inhibits selective oxidation and externalization of phosphatidylserine during paraquat-induced apoptosis.Am. J. Physiol.: Cell Physiol.1997;41(2):C 675-C 684.

79. Tyurin VA, Carta G, Tyurina YY, Banni S, Day BW, Corongiu FP, Kagan VE. Peroxidase-catalyzed oxidation of b-Carotene in HL-60 cells and in model systems: involvement of phenoxyl radicals. Lipids. 1997; 32(2):131-142.

80. Osaka K, Ritov VB, Bernardo JF, Branch RA, Kagan VE. Amphotericin B protects cis-parinaric acid against peroxyl radical-induced oxidation: amphotericin B as an antioxidant. Antimicrob. Agents and Chemother. 1997; 41(4):743-747.

81. Goldman R, Tsyrlov IB, Grogan J, Kagan VE. Reactions of phenoxyl radicals with NADPH-cytochrome P-450 reductase and NADPH: reduction of the radicals and inhibition of the enzyme. Biochemistry.997; 36(11):3186-3192.

82. Gorbunov NV, Yalowich JC, Gaddam AS, Thampatty P, Kisin ER, Elsayed NM, Kagan VE. Nitric oxide prevents oxidative damage produced by tert-butyl hydroperoxide in erythroleukemia cells via nitrosylation of heme and non-heme iron: electron paramagnetic resonance evidence. J. Biol. Chem. 1997; 272:12328-12341.

83. Goldman R, Bors W, Michel M, Day BW, Kagan VE. Environmental and nutritional phenols: bioactivation to phenoxyl radicals and their cytotoxic and/or protective interactions with intracellular reductants. Env. Nutr. Interactions. 1997; 1(2):97-118.

84. Hubel CA, Kagan VE, Kisin ER, McLaughlin MK, Roberts JM. Increased ascorbyl radical production and ascorbate depletion in plasma from women with preeclampsia: implications for oxidative stress. Free Radical Biol. Med. 1997, 23(4):596-609.

85. Craven PA, DeRubertis FR, Kagan VE, Melhem M, Studer RK. Effects of supplementation with vitamin C or E on albuminuria, glomerular TGFß and size in diabetes. J. Am. Soc. Nephrol. 1997; 8: 1405-1414.

86. Tyurina YY, Tyurin VA, Carta G, Quinn PJ, Schor NF, Kagan VE. Direct evidence for antioxidant effect of Bcl-2 in PC-12 rat pheochromocytoma cells. Arch. Biochem. Biophys. 1997; 344:413-423.

87. Osaka K, Tyurina YY, Dubey RK, Tyurin VA, Ritov VB, Quinn PJ, Branch RA, Kagan VE. Amphotericin B acts as an intracellular antioxidant: protection against 2,2'-azobis(2,4-dimethylvaleronitrile)-induced peroxidation of membrane phospholipids in rat aortic smooth muscle cells. Biochem. Pharmacol. 1997; 54:937-945.

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89. Maulik G, Maulik N, Bhandari V, Kagan VE, Pakrashi S, Das DK. Evaluation of antioxidant effectiveness of a few herbal plants. Free Radical Res. 1997; 27(2):221-228.

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91. Omaye ST, Krinsky NI, Kagan VE, Mayne ST, Liebler DT, Bidlack WR. □-Carotene: friend or foe? Fund. Appl. Toxicol. 1997; 40:163-174.

92. Maulik N, Kagan VE, Tyurin VA, Das DK. Redistribution of membrane phosphatidylethanolamine and phosphatidylserine precedes the reperfusion-induced apoptosis in heart. Am. J. Physiol.: Heart Circul. Physiol. 1998; 43(1):H 242-H 248.

93. Gorbunov NV, Tyurina YY, Salama G, Day BW, Claycamp HG, Argyros G, Elsayed NM, Kagan VE. Nitric oxide protects cardiomyocytes against *tert*-butyl hydroperoxide-induced formation of alkoxyl and peroxyl radicals and peroxidation of phosphatodylserine. Biochem. Biophys. Res. Commun. 1998; 244:647-651.

94. Fabisiak JP, Kagan VE, Tyurina YY, Tyurin VA, Lazo JS. Paraquat-induced phosphatidylserine oxidation and apoptosis is independent of activation of phospholipase A2. Am. J. Physiol.: Lung Cell. Molec. Physiol. 1998; 18(5):L 793-L 802.

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97. Kagan VE, Tyurina YY. Recycling and redox cycling of phenolic antioxidants. Ann. N.Y. Acad. Sci. 1998; 854:425-434.

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11(3):55-60.

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178. Gorbunov NV, Kagan VE, Alekseev SM, Erin AN. Role of isoprenoid chain in lateral mobility of alpha-tocopherol in lipid bilayer. Bull. Exp. Biol. Med. Rus. 1991; 112:39-41.

179. Bakalova RA, Sokolova T, Ribarov S, Kagan V. Effects of alpha-tocopherol and its homologues on luminol-de[endent chemiluminescence induced by (Fe^{2+} + NADPH) and (Fe^{2+} + ascorbate) in rat liver microsomes. Bull. Exp. Biol. Med. Rus. 1991; 112(11): 482-485.

180. Kovacheva-Ivanova S, Bakalova R, KaganV, Georgiev, G. Activation of lipid peroxidation and changes in the vitamin E level in the lungs under oxidative stress. Bull. Exp. Biol. Med. Rus. 1992; 113(2):132-134.

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182. Tyurin VA, Erin AN, Tyurina YY, Avrova NF, Kagan V.E. Gangliosides regulate free-radical reactions in brain membranes. Bull. Exp. Biol. Med. Rus. 1992; 114(12):592-594.

183. Tyulina OV, Kagan VE, Boldyrev AA. Effects of carnosine and related compounds on oxidative burst in leukocytes activated by barium sulphate. Bull. Exp. Biol. Med. Rus.1994; 116(11):463-465.

184. Kurella AG, Kagan VE, Bodyrev AA. Sensitivity of brain and kidney Na/K-ATPase to oxygen free radicals. Neurochemistry (Russia). 1996; 13(4):314-320.

PRESENTATIONS AT NATIONAL AND INTERNATIONAL MEETINGS

Invited as a Key-Note speaker, Plenary speaker or Session speaker at more than 300 congresses and meetings and presented more than 700 posters.

PROFESSIONAL ACTIVITIES

TEACHING

Formal classroom

1. EOH 2101 - Introduction to Research Methods I; Instructor
2. EOH 2102 - Introduction to Research Methods II; Instructor 3. EOH 2306 - Biochemical Techniques in Molecular Toxicology; Instructor
4. MSCMP3710 - Cancer Biology and Therapeutics (Graduate Pharmacology Course Series); (1 hour)
5. EOH 2175 - Principles of Toxicology. (4 hours);
6. EOH 3210 - Molecular Fundamentals – (1 hour)
8. MSMBPH 2012 Molecular Biophysics 2: Biomolecular Interactions and Dynamics Instructor – (1 hour)

SUPERVISION OF POSTDOCTORAL STUDENTS:

Postdoctoral Fellows Directed in Pittsburgh (since 1992):

Dr. Detcho A. Stoyanovsky, Topic: "Interaction of phenoxyl radicals with reductants (ascorbate and thiols) in model chemical systems"; 1992 - 1995, 6 papers are published or accepted for publication during this period.

Dr. Vladimir A. Tyurin (on leave from the Institute of Evolutionary Biochemistry, St. Petersburgh, Russia, supported by a training grant from UNESCO); Topic: "Oxidation of sulfhydryls in metallothioneins by VP-16 phenoxyl radicals"; 1993- 1994, second visit 1997-2004; 20 papers published.

Dr. Vladimir B. Ritov (on leave from M.V. Lomonosov Moscow State University, supported by a training grant from NSF); Topic: "Effects of reactive phenoxyl radicals on Ca^{2+}-transport and Ca^{2+}-pump in sarcoplasmic reticulum membranes"; 1993-1994; 4 papers published.

Dr. Yulia Y. Tyurina (on leave from the Institute of Evolutionary Biochemistry, St. Petersburgh, Russia); Topic: "Reactivity of phenoxyl radicals of VP-16 and vitamin E homologues with intracellular GSH and protein sulfhydryls", 1993-1994, second visit 1997-2004; 24 papers published.

Dr. Elizabeth V. Menshikova (on leave from the Helmholtz Research Institute for Eye Diseases, Moscow), Topic: "Characterization of Ca^{2+}-transport in pulmonary microsomes and its modification by oxidative stress"; 1993-1994; 3 papers published.

Dr. Anatoly N. Osipov (on leave from N. Pirogov Medical University of Russia, Moscow); Topic "Role of ubiquinones in regeneration of vitamin E phenoxyl radicals by membrane electron transport); 1994 - 1995; 4 papers published.

Dr. Nikolai V. Gorbunov (collaboration with Walter Reed Institute of Research, Washington, D.C.); Topic: "Interactions of nitric oxide with antioxidants and their radicals); 1994-1996; 6 papers published.

Dr. Catherine G. Kurella (on leave from the Institute of Neurology, Medical Academy, Russia); Topic: "Oxidative modification of Na,K-ATPase by phenoxyl radicals", 1994; 1 paper published.

Dr. Sebastiano Banni (on leave from the University of Cagliary, Italy); Topic "Quantitation of oxidative stress in cells", 1995; 1 paper published

Dr. Andrew Kozlov (on leave from N. Pirogov Medical University of Russia, Moscow); Topic "Low-temperature ESR studies of NO-complexes with transition metal-binding proteins in the blood"; 1995; 3 papers published.

Dr. Kazuhara Osaka (on leave from Jikei University School of Medicine, University of Tokyo, Japan);

Topic "Development of methodology for assay of pharmacologically active Amphotericin B in biological fluids". 1996; 2 papers published.

Dr. Tatyana V. Sokolova (on leave from Institute of Evolutionary Biochemistry & Physiology, St. Petersburg, Russia); Topic "Phospholipid peroxidation in apoptosis". 1997; 1 paper submitted**.**

Dr. Shang Xi Liu (on leave from Department of Biochemistry, The First Military Medical University, Guangzhou, China); Topic "Free radical regulation of copper transfer between metallothioneins and SOD). 1999- 2001; 6 papers published.

Dr. Oleksander Kuzmenko (On leave from A.V. Palladin Institute of Biochemistry, Ukraine, Kiev); Topic: "Free radical/antioxidant approaches to chemprevention of etoposide-induced acute myelogenous leukemia", 1999- 2005; 4 papers published.

Dr. Kazuaki Kawai, (On leave from the Laboratory of Biological Sciences, Faculty of Pharmaceutical Sciences, Meijo University, Nagoya, Japan). Topic: "Oxidative stress and phospholipid signaling in apoptosis". 1999-2001; 5 papers published.

Dr. Tatsuya Matsuura (on leave from Tottori University, Japan). Topic: "Development of multiphoton-based imaging techniques to study oxidative stress in cells." 2000-2001; 4 papers published.

Dr. Antonio Arroyo (On leave from the Department of Molecular and Cell Biology, University of Cordoba, Spain); Topic "Mechanisms of NADPH-oxidase-induced oxidative stress and apoptotisis in neutrophils"2000 – 2001, 3 papers published.

Dr. Behice Serinkan (On leave from the University of Istanbul, Turkey). Topic: "Effects of antioxidants on oxidation and externalization of phosphatidylserine durinf apoptosis and phagocytosis". 2001 – 2002; 4 papers published.

Dr. Gregory Borisenko (On leave from Medical University of Russia, Moscow, Russia). Topic: "Fluorescence detection of thoyl radicals in cells". 2001 –2004; 5 papers published.

Dr. Hareesh Babu (On leave from Cancer Center in Kerala, India). Topic: "Oxidative stress and externalization of phosphatidylserine in apoptosis". 2002 –2003; 2 papers published

Dr. Mirjana Djukic (On leave from the University of Belgrade, Serbia). Topic: "Synthesis of fluorescently-labeled phosphatidylserine and its applications in studies of apoptosis". 2002-2003; 2 papers published.

Dr. Alla Potapovich (On leave from the Univerisity of Belarus, Minsk, Belorussia). Topic: "Phosphatidylserine signaling and ROS production by macriphages." 2003 –2005; 3 papers published.

Dr. Natalia Belikova (On leave from Medical University of Russia). Topic: "Mitochondrial targeting of anti-apoptotic radical scavengers." 2004 – 2009. 2 papers published.

Dr. Olexander Kapralov (On leave from Institute of Biochemistry, Kiev, Ukraine). Topic: "Interactions of cytochrome c with cardiolipin resulting in a complex with peroxidase activity." 2004 – 2006; 2 papers published.

Dr. Weihong Feng. Topic: "Lung Oxidative Stress Inflamation of Carbon Nanotubes." 2006 – 2011; 15 papers published.

Dr. Jin Ren. Topic: "Center for Medical Counter Measures Against Radiation." 2006 – 2008; 3 papers

published.

Dr. Ruslan Rafikov. Topic: "Cardiolipin Oxidation during Irradiation Apoptosis." 2006 –2008; 2 papers published.

Dr. Zhentai Huang. Topic: "Pulmonary Inflammation/Oxidative Stress by Carbon Nanotubes." 2006 – 2013; 17 papers published.

Dr. Yanamala N. Topic: "Structural studies of proteins with redox fuctions." 2008-2011; 21 papers published.

Dr. Anna Vikulina. Topic: "Mass spectrometry of cardiolipins and their oxidation products." 2012-2013; 3 papers published.

Dr. Daniel Winnica. Topic: "Oxidative mitochondrial damage." 2012-2013; 3 papers published.

Dr. L.J. Sparvero. Topic: "Mass-spectrometric imaging of lipids." 2008-2009; 9 papers published.

Dr. K.K. Balasubramanian. Topic: "Oxidative siugnaling by cardiolipins." 2012-2014; 4 papers published.

Dr. R.Rong. Topic: "Imaging mass-spectrometry of lipidsin the brain." 2013-2014; 3 papers published.

Dr. Feng Qu. Topic: "Analysis of MS data related to phospholipid peorxidation." 2014-2016.

Dr. Haider Dar. Topic: "Cell death in pathogen-host interactions." 2015-present.

Dr. Gaowei Mao. Topic: "Biomarkers of programmed cell death." 2015-present.

Doctoral Students Directed during the work in the former USSR and Bulgaria (primary supervisor, 1974-1989):

Kotelevtsev SV. PhD in biophysics (1975): "EPR studies of NAD(P)H-dependent electron transport in endoplasmic reticulum membranes using stable nitroxide radicals."

Beriya VP. PhD in biochemistry (1976): "Enzymatic lipid peroxidation as a trigger of disassembly of CYP450 system in endoplasmic reticulum membranes."

Novikov KN. PhD in biophysics (1977): "Light-induced free radical production in photoreceptor membranes."

Arkhipenko YuV. PhD in biochemistry (1978): "Modulation of Ca2+-transport in sarcoplasmic reticulum membranes by oxidative stress."

Savov VM. PhD in biophysics (1979): "Spin-trapping ESR study of radicals, generated during interaction of organic hydroperoxides transition metals and metalloproteins."

Tyurin VA. PhD in biophysics (1980): "Role of lipids in thermal stability of rhodopsin in photoreceptor mebranes."

Rozhitskaya II. PhD in biochemistry (1980) "Oxidative stress and damage of Ca^{2+}-transport in sarcoplasmic reticulum induced by stress and ischemia/reperfusion of the heart"

Klaan NK. PhD in biophysics (1981): “Spin-probe ESR study of molecular organization of lipids in membranes”

Sazontova. TG. PhD in biochemistry (1981) “Oxidative modification of of Na,K-ATPase in rat myocardial sarcolemma.”

Churakova T.D. PhD in biochemistry (1982): “Role of lipid peroxidation in ischemia damage of skeletal muscles sarcoplasmic reticulum membranes.”

Bratkovskaya L.B. PhD in biophysics (1982): “Oligomerization of intrinsic membrane proteins in the course of lipid peroxidation.”

Serbinova E.A. PhD in biochemistry (1982): “Oxidative stress and proteolytic degradation of cytochrome P-450 in rat liver microsomes.”

Kuliev I.Y. PhD in biochemistry (1983): “Singlet-oxygen induced lipid peroxidation and suppression of electrical activity of the retina in vitamin E-deficient rats exposed to high-light intensity.”

Velikhanova D.M. PhD in biochemistry (1983): “Ischemia/reperfusion-induced damage of mixed function oxidases in endoplasmic reticulum membranes in the liver: role of lipid peroxidation.”

Tabidze L.V. PhD in biophysics (1983): “alpha-Tocopherol as a structural stabilizer of lipid bilayer in membranes.”

Bulgakov V.G. PhD in biophysics (1983): “Ion permeability channels formed by lipid peroxidation products in bilayer lipid membranes.”

Minin AA. PhD in biochemistry (1984): “Reconstitution of hormone-sensitive adenylate cyclase after solubilization by different detergents.”

Pisarev VA. PhD in Biophysics (1985): “Generation of reactive oxygen species and its regulation regulation in sarcoplasmic reticulum of skeletal and heart muscles.”

Skrypin V.I. PhD in biophysics (1986): “NMR studies of alpha-tocopherol as a modifier of phase transitions in membrane lipid bilayers.”

Bakalova R.A. PhD in biochemistry (1987): “Membrane antioxidant mechanisms of vitamin E homologues differing in the length of their side chain.”

Stoyanovsky D.A. PhD in biochemistry (1988): “Molecular mechanisms of antioxidant interactions of alpha-tocopherol.”

Kharfuf M. PhD in biochemistry (1988): “Antioxidant mechanisms of hindered phenols in biomembranes.”

Doctoral and MS Students Directed in Pittsburgh (primary supervisor):

Mr. Radoslav Goldman, PhD student, graduated in 1996. Environ.Occup.Health - Dissertation topic: "Molecular mechanisms and role of phenoxyl radicals in cytotoxicity of phenolic compounds." (Currently, a postdoctoral Fellow in the laboratory of Molecular Carcinogenesis, NCI, NIH).

Ms. Arunasri Gaddam, student in MS program – graduated in 1997. Research project topic: "Oxidative stress in erythroleukemia cells: mechanisms of induction and protection by nitric oxide"

Ms. Vidisha Kini, MS student – graduated in 2005. Research project topic: "Radical scxavenging in mechanisms of apoptotic signaling by etoposide."

Mr. Nagarjun Konduru, PhD student – graduated in 2012. Topic "Phospholipid signaling in phagocytosis." July 2005 present, 6 papers published.

Mr. Dariush Mohammadyani, PhD student, graduated in 2016. Topic "Structural studies of interactions of lipids with redox-active proteins." 6 papers published.

Mr. Hsiu Chi Ting, PhD student, 2016 – present. Topic "Role of iron in ferroptotic cell death."

Mr. Andrew Lamade, PhD student, 2016 – present.

Doctoral Students Directed in Pittsburgh (secondary supervisor):

Mr. Antonio Arroyo a Ph.D. student from the Department of Molecular and Cell Biology, University of Cordoba, Spain); Topic "One-electron reactions catalyzed by plasma mebrane NADH-coenzyme Q reductase". 1997; 1 paper published; graduated in March 2000 (Ph.D. in cell biology).

Mr. Gregory Borisenko a Ph.D. student from N. Pirogov Medical University of Russia, Moscow. Topic "Low-temperature ESR studies of copper/metallothionein complexes"; 1998–2000; 3 papers published; graduated in December 2000.

Mr. Juanfang Wu, PhD. Student from the Department of Chemistry, University of Pittsburgh. "Online determination of extracellular glutathione in organotypic hippocampal slice cultures with a microfluidic device and confocal laser-induced fluorescence detection system, 2010.

Mr. Ji Jing, PhD. Student from the Department of Environmental and Occupational Health. "Oxidative stress and traumatic brain injury, 2012.

Predoctoral Students Trained in Pittsburgh (secondary supervisor):

Mr. R. Rabledo (a minority summer student); Topic: "Interactions of VP-16 phenoxyl radicals with reductants in liver tissue and hepatocytes", 1993

Ms. Gianfranca Carta (on leave from the University of Cagliary, Italy); Topic "Interaction of phenoxyl radicals with retinoids and carotenminds", 1996 - 1997; 2 papers published

Ms. Stefania Bergamini (on leave from the University Of Modena, Italy); Topic "Anti-/prooxidant effects of carotenoids in live cells". 1997 - 1997; 1 paper published

Ms. Gwen Breuer (graduated from St. Vincent College, PA); Topic: "Antioxidant Reserves and Thiols in Metallothionein-Knock-out Mice Exposed to Acetaminophen", 1997, 1 paper presented at the Meeting

Mr. Andrey Sedlov (on leave from MV Lomonosov Moscow State University, Russia, Moscow); Topic: "Multifluorescence analysis of the redox-status of proteins in cells"; 1998 –1999, 2 papers published.

Mr. Mike J. Taylor (summer student from Westminster College, PA); Topic: "Quinolizin-coumarins as

physical enhancers of low level chemiluminescence to study oxidative stress in cells." 2000; 1 paper published

Mr. Ian Martin (undergraduate student from King's College, London, UK). Topic: "Free radical mechanisms of a phenolic antitumor drug, etoposide." 2001 –2002, 1 paper published.

Ms. Anastasia Polimova (Visiting Pre-Doctoral Fellow from the Russian Federation);"Apoptotic pathways in mitochondria of cells grown in cultures as well as in tissues of animals exposed ot hyperoxia or irradiation." 2014 –2015; 2 papers published.

Ms. Anna Vikulina (Visiting Predoctoral Fellow from Moscow State University); "Studies of apoptotic pathways in mitochondria of cells grown in cultures as well as in tissues of animals expoed to hyperoxia or irradiation." 2012 –2013.

Faculty, Pre- and Postdoctoral Training Grants and Programs:

Faculty, EOH, DOD-supported Postdoctoral Training Program in Radiation Sciences
Facutly, Department of Pharmacology, Predoctoral Training Program in Pharmacological Sciences
Faculty, Departments of Anesthesiology and Critical Care Medicine, Training Program in Experimental Therapeutics in Critical Illness

GRANTS AND CONTRACTS RECEIVED (since 1992):

Grants:

1992-1993 PI, American Cancer Society, Institutional Small Grant.
1993-1995 PI, Grant from the American Heart Association, Pennsylvania Affiliate, Recycling of vitamin E and its antioxidant function in the heart.
1994-1996 PI, Grant from the American Institute for Cancer Research "Role of dietary anti-oxidants in free radical enhancement of etoposide (VP-16) antitumor activity."
1994-1996 PI, Grant from National Science Foundation "Role of coenzyme Q in regenerating vitamin E in electron transport membranes."
1994-1997 Co-PI, (Dr. J.C. Yalowich - PI) Grant from American Cancer Society, Free radical activation of VP-16/topoisomerase II interactions."
1994-1995 PI, Grant from the US Army Medical Command. Free radical mechanisms of hemorrhagic damage.
1994-1995 PI, Grant from the US Army Medical Command. Ca^{2+} transport systems and pulmonary damage by blast overpressure. .
1995-1996 PI, Grant from the US Army Medical Command. Antioxidant protection against free radical damage by blast overpressure. .
1995-1998 Co-PI, (PI - Dr. Peter Quinn (King's College, University of London)) Grant from The Wellcome Trust "Antioxidant mechanisms of ubiquinones in non-energy transducing membranes"
1996-2000 PI, Grant from Center for Alternatives to Animal Testing; School of Hygiene and Public Health Johns Hopkins University "Fluorescent probing of oxidative stress and antioxidant efficacy in cell culture model",
1996-1998 PI, Grant from the US Army Medical Command. Nitric oxide in free radical protection of the lung.
1997-2001 Co-Investigator, (J. Roberts - PI) Grant from NIH, NICHHD "Preeclampsia: Convergence of Fetal and Maternal Factors." Project 3: Oxidative Stress in the genesis of preeclampsia.
1997-2001 Co-Investigator, (M. McLaughlin - PI) Grant from NIH, NICHHD "Preeclampsia:

Convergence of Fetal and Maternal Factors." Project 4: Medfiators of Vascular and Pathology in Preeclampsia.

1997-1997 Co-PI (E. Serbinova - PI) Grant from NIH "Topical Vitamin D Treatment for Skin Disease and Aging"

1997-2000 Co-PI, (N. Schor - PI), Grant from DOD "Exploiting bcl-2 Overexpression in the Chemotherapy of Breast Cancer

1997-1998 Co-PI, (N.Schor - PI), Grant from NIH (Shannon Award) "Targeted Therapy for Chemoresistant Tumors

1998-2002 Co-PI, (N.Schor - PI), Grant from NIH, NCI "Targeted Therapy for Chemoresistant Tumors"

1998-1998 Co-PI (J. Fabisiak - PI), Grant from NIH "Endothelial lipid oxidation/translocation by paraquat"

1998-1998 Co-Investigator, (B.Day - PI), Grant from NIH, "Oxidative Biomarkers in Asthma".

1998-2001 PI, Grant from the American Institute for Cancer Research "Development of Nutritional Antioxidant-based Strategies to Prevent Etoposide-induced Acute Myeloid Leukemia"

1998-2003 Co-Investigator, (B.R.Pitt - PI) Grant from NIH "Metallothionein and Reactive Oxygen and Nitrogen Species.

1998-1999 Co-Investigator, (C. Hsia - PI) Grant from NIH "PNA, Nitroxide and 6OHDA for Metastatic Neuroblastoma"

1998-2001 Co-Investigator (S. Graham - PI) Merit award from VA "The role of inducible cyclooxygenase in delayed neuronal injury"

2000-2001 PI, Grant from Research Development Fund, Office of Research, University of Pittsburgh, to support research instrumentation

1999-2003 Co-Investigator (S. Graham - PI) Grant from NIH "Cyclooxygenase 2 and ischemic neuronal injury"

1999-2002 Co-PI (J. Fabisiak – PI) Grant from EPA "Metal/metal/NO mixtures: metallo-thioneins and oxidative stress"

1999-2000 Co-Investigator (T. Orchard – PI) Epidemiology of Diabetic Complications – Phase II; Grant from NIH.

2000-2001 Co-Investigator on Projects 1 and 3 (PI - D. Marion), Molecular Mechanisms in Traumatic Brain Injury: from Bench to Bedside

2000-2004 PI, Copper/Albumin Redox-Cycling in Preeclampsia. Grant from NIH HL64145

2001-2006 Co-Investihator (PI-J. Greenberger). Gene therapy reduction of readiotherapy esophagitis. Grant from NIH 1RO1 CA 83876-01A2

2002-2006 Co-Investigator (PI-J.Siegfried) NIH SPORE grant in Lung Cancer Co-PI (PI-J.Yalowich). Mechanisms and prevention of etoposide-induced leukemia. Grant from NIH NCI. 1RO1 CA 90787-01

2002-2007 PI, Pulmonary phosphatidylserine oxidation during apoptosis. Grant from NIH NHLB HL70755

2002-2007 Co-Investigator (PI- N. Schor). Antioxidant Strategies for Parkinson's Disease, NIH NCI

2003-2008 Co-Investigator, (J. Roberts - PI) Grant from NIH, NICHHD "Preeclampsia: Convergence of Fetal and Maternal Factors." Project 3: Oxidative Stress in the genesis of preeclampsia.

2003-2008 Co-Investigator (PI- N. Schor). Targeted Therapy for Chemoresistant Tumors.NIH NCI

2003-2008 Director, Core on Biomarkers of Oxidative Stress, (PI-A. Choi), PPG from NHLB "Hyperoxic Lung Injury"

2003-2008 Co-Investigator, (PI- M. Sanders), RO1 from NHLB "OSA and metabolic syndrome: role of oxidative stress"

2005-2007 Co-Investigator (PI-M. Fink). Anti-apoptotic strategies against hemorrhagic shock. DARPA, DOD

2005-2009 PI: Oxidative lipidomics of cell clearance: from nematodes to humans. Human Frontier Science Program.

2005-2009 PI on Sub-project 3 (PI of the Program Project - S. DeKosky). Neurolipidomics in dementia, Program project funded by the State of Pennsylvania
2004-2009 Co-Investigator (PI-J. Greenberger). Mn-SOD-PL Irradiation Protection in the Oral Cavity
2005-2009 PI, NIOSH, CDC, Lung Oxidative Stress/Inflammation By Carbon Nanotubes.
2006-2007 PI on Project 2 "Prevention of cardiolipin oxidation in irradiation apoptosis," a part of the Center for Medical Countermeasures against Radiation; (PI of the Center – J. Greenberger). PI, NIH/Fogarty International Center, "Cytochrome c Mechanism of ROS signaling in Apoptosis"
2006-2011 Co-Investigator, "Novel Nitroxide resuscitation Strategies in Experimental Traumatic Brain Injury," US Army
2007-2012 Co-Investigator, "Regulation of Autophagy in Dopaminergic Cell Death," NIH
2007-2012 Co-Investigator, "Mechanisms and Prevention of Etoposide Induced Leukemia" NIH/NCI
2008-2013 PI, "Oxidative Lipidomics of Pulmonary Endothelial Apoptosis in Hyperoxia," NIH/NHLBI
2008-2013 Co-Investigator, "Oxidative Lipidomics in Pediatric Traumatic Brain Injury" NIH/NINDS
2008-2013 Co-Investigator, "Mechanisms of Preeclampsia Impact of Obesity" Magee Womens Research Institute and Foundation/NIH
2008-2013 Co-Investigator, "TNF-alpha signaling in Silica-Induced Lung Fibrosis" NIH/NIEHS
2009-2011 PI, "Irradiation Damage and Protection of Pulmonary Endothelium: Oxidative Lipidomics" NIH
2010-2016 PI, "Lung Oxidative Stress/Inflammation by Carbon Nanotubes" NIH/NIOSH
2010-2019 PI, Project 2, "Mitochondrial Targeting Against Radiation Damage" NIH/NIAID
2010-2015 PI, "Carbon Nanotubes Biodegradation by Neutrophil Myeloperoxidase" CDC/NIOSH
2010-2015 Co-PI, "Investigation and Mitigation of Carbon Nanomaterial Toxicity" NIH/NIEHS
2011-2017 Co-PI, "Oxygenated Species of Cardiolipin's as Biomarkers of Mitochondrial Dysfunction" NIH/NIEHS
2012-2014 Co-PI, "Imaging Mass Spectrometry for Oxidized Lipidomics in Acute Lung Injury"
2012-2017 Co-PI, "Mapping Lipid Oxidation in Traumatic Brain Injury by Mass Spectrometric Imaging" NIH
2012-2017 Co-PI, "Lipids and Myeloid Cell Function in Cancer" H. NIH/NCI
2014-2017 PI of Lipidomics Project. "Oxidative Lipidome: The Unspoken Language of Non-Apoptotic Cell Death. Human Frontier Science Program.
2014-2018 Co-PI, "Cardiolipin as a Novel Mediator of Acute Lung Injury" NIH
2014-2019 PI, Project #2, "Cardiolipin Signaling in Acute lung Injury." NIH/NHLBI
2014-2019 Co-PI- "Oxidative Lipidomics in Pediatric Traumatic Brain Injury" NIH/NIND
2014-2019 Director, Lipidomics Core, "Cardiolipin in Acute Lung Injury." NIH/NHLBI
2015-2018 PI, Cardiolipin Oxidation in Barth Syndrome
2015-2018 PI, "Mechanisms and Role of Cardiolipin Oxidation and Hydrolysis in Barth Syndrome"
2015-2020 Co-PI, "Mechanism-Directed Sequential Delivery of Radiation Mitigators, Project 2, Targeting of New Derived Lipid Mediators Pathways for Radiomitigation, Cardiolipin-Coordinating Center Care

Contracts:

1993-1994 PI, Contract from the World's Health Organization (via New York Institute for Medical Research) "Assessment of plasma antioxidant status" within the framework of the WHO project on "Combined utilization of antidepressants and antioxidants in the treatment of therapy resistant depression".

1994-1996 PI, Contract from Magee-Womens Research Institute, "Plasma antioxidant reserves in pregnant women with preeclampsia".
1995-1996 PI, Contract from Safar International Center for Resuscitation Research (the University of Pittsburgh) "Brain antioxidants after cardiac arrest".
1998-1999 PI, Contract from Safar International Center for Resuscitation Research (the University of Pittsburgh) "Uncontrolled hemorrhagic shock in rats".
2000-2001 PI, Contract from Bertek Pharmaceuticals, Inc (Foster City, CA) "Effects of Butenafine on peroxisomal enzymatic activities in rat and human hepatocytes".
2000-2002 PI, Contract from Safar International Center for Resuscitation Research (University of Pittsburgh) "Uncontrolled hemorrhagic shock in rats".
2011-2014 PI, Contract from Glaxo Klein Smith.

Grants to support postdoctoral training and collaborative research:

1993 PI, Grant from Research Development Fund, Office of Research, University of Pittsburgh to support collaborative research with Prof. Peter Quinn (King's College, University of London).
1993-1994 PI, Grant from the UNESCO Global Network in Molecular and Cell Biology to support postdoctoral training and collaborative research with Dr. V. Tyurin (I.M.Sechenov Institute of Evolutionary Biochemistry and Physiology, St. Petersburg, Russia).
1993-1994 PI, Grant from NSF to support visit (postdoctoral training and collaborative research) for Dr. V. Ritov (M.V. Lomonosov Moscow State University, Russia).
1994 Co-PI, Grant from the Hewlett International Small Grants Program to support visit to Novokuznetsk, Russia to initiate the project "Plasma antioxidant reserves in coke-oven operators of Novokuznetsk Steel Combine", (together with Dr. R. Day, Department of Biostatistics, GSPH).
1994-1995 Grant from from The Society of Toxicology Graduate Fellowship Award (sponsored by Hoffmann-La Roche);
1994-1995 Grant from The Allegheny-Erie Chapter of Society of Toxicology Graduate Fellowship Award for Rado Goldman.
1995-1996 Grant from EPA (Graduate Fellowship Award) to support graduate student, Rado Goldman
1995-1996 PI, Grant from the National Science Foundation to support visit of a graduate student R. Goldman to Germany to conduct a collaborative research on fast Kinetics of thiol-phenoxyl radicals with Dr. W. Bors (National Laboratory for Radiation Research, Munich).
1997-2002 Principal Trainer, (M. Pinsky - PI), NIH, Institutional National Research Service Award for Institutional Researcg Training Grant.
1998-2000 International Fellowship award from NIH/WHO to support postdoctoral fellow Yulia Tyurina (Russia).
1999-2000 Magee-Womens Research Institute Fellowship award to support postdoctoral training of Dr. Vladimir Tyurin
2000-2002 Seed grant from the Department of Anesthesiology and Critical Care Medicine, University of Pittsburgh, Dr. Hulya Bayir, MD.
2000-2001 Award from the Ministry of Education and Science of Spain to support training and research of Dr. Antonio Arroyo
2002-2004 International Fellowship award from NIH NINDS/WHO to support postdoctoral Fellow Gregory Borisenko (Russia).
2007 Mentored Clinical Scientist Research Career Development Award Application for grant proposal entitled, "Oxidative stress in regional cerebral blood flow Alterations after cardiac arrest" of Dr. Mioara D. Manole

SERVICE

ADMINISTRATIVE

Department

Vice-Chairman, Department of Environmental and Occupational Health, University of Pittsburgh
Chairman, Departmental Admission Committee, Graduate School of Public Health, University of Pittsburgh
Member, Subcommittee on Molecular Toxicology, Environmental and Occupational Health, Departmental Committee, University of Pittsburgh
Chairman, Departmental ad hoc Committee on Chemoprevention, Department of Environmental and Occupational Health, University of Pittsburgh
Member, Department of Environmental and Occupational Health, Promotion and Advancement Committee

School

Member, GSPH Faculty Appointment Promotion and Tenure Committee
Member, GSPH Planning and Budget Policies Committee

University

Member, Admission Committee, Integrated Interdisciplinary Biomedical Graduate Program, School of Medicine/Graduate School of Public Health
Member, STEP Committee, Integrated Interdisciplinary Biomedical Graduate Program, School of Medicine/Graduate School of Public Health

SCIENTIFIC

Editorial Boards of Journals:

Antioxidant and Redox Signaling – Executive Editor
Chemistry and Physics of Lipids – Associate Editor
Free Radical Biology and Medicine
Bioochimica et Biophysica Acta - Biomembranes
Nanomedicine, Nanotechnology, Biology and Medicine

Reviewer of Grant Proposals for:

National Science Foundation
National Institutes of Health
International Science Foundation
National Research Counsel of Singapore
International Coenzyme Q Association
Competitive Medical Research Fund, UPMC, University of Pittsburgh
Technology Transfer Committee, University of Pittsburgh