
CURRICULUM VITAE
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EDUCATION and TRAINING

Graduate

1986 - 1991 Bulgarian Academy of Sciences Ph.D. in Biochemistry, Laboratory
Sofia, Bulgaria, EU of Prof. Tsanko Stoychev

1981 - 1986 Sofia University M.S. in Organic and in Analytical
Sofia, Bulgaria, EU Chemistry, Laboratory of
Prof. Ivan Nachev

Postgraduate

9/1995 - 12/1997 Mount Sinai School of Medicine Postdoc, Metabolism of
New York xenobiotics by CYP450s,
Laboratory of Prof. Arthur I.
Cederbaum

7/1993 - 8/1995 University of Pittsburgh Postdoc, Redox biochemistry of
Pittsburgh, PA phenols, Laboratory of Prof.
Valerian E. Kagan

APPOINTMENTS and POSITIONS

Academic

2010 - Present	Graduate School of Public Health University of Pittsburgh Pittsburgh, PA	Research Associate Professor Environmental and Occupational Health
2002 - 2009	School of Medicine University of Pittsburgh Pittsburgh, PA	Assistant Professor Surgery
1998 - 2001	Mount Sinai School of Medicine New York, NY	Research Assistant Professor Biochemistry

MEMBERSHIP in PROFESSIONAL and SCIENTIFIC SOCIETIES

2011 - Present	Member, Radiation research society
1996 - Present	Member, American Chemical Society

PROFESSIONAL ACTIVITIES

Teaching

Courses Taught

Years Taught	Course Title	Hours of Lecture, Average Enrollment	Role in course Primary/Coordinator
2006 - 2009	Methods and Logic in Medicine	2 semesters per year/2 seminars per week with groups of 8 – 10 first- and second-year medical students	Coordinator (Course Director - prof. Beth Piraino, University of Pittsburgh Medical School)

Service on Masters or Doctoral Committees

Dates Served	Name of Student	Degree Awarded	Title of Dissertation/Essay
2009 – 2012	Oscar S. Benz	Ph.D.	Cobalt(III) Macrocycles as Possible Cyanide Antidotes”
2009 - 2012	Thambiayya Kalidasan	Ph.D.	Role of Intracellular Labile Zinc in LPS-Induced Apoptosis in Sheep Pulmonary Arterial Endothelial Cells (SPAECs)

PUBLICATIONS

Peer-reviewed Publications

(Google Scholar: Citations, 3524; h-index = 32; g-index = 58)

1. Stoyanovsky AD, **Stoyanovsky DA**. 1-Oxo-2,2,6,6-tetramethylpiperidinium bromide converts α -H N,N-dialkylhydroxylamines to nitrones via a two-electron oxidation mechanism. *Sci. Rep.* 2018, 8:15323. doi: 10.1038/s41598-018-33639-w.
2. **Stoyanovsky DA**, Tyurina YY, Shrivastava I, Bahar I, Tyurin VA, Protchenko O, Jadhav S, Bolevich SB, Kozlov AV, Vladimirov YA, Shvedova AA, Philpott CC, Bayir H, Kagan VE. Iron catalysis of lipid peroxidation in ferroptosis: Regulated enzymatic or random free radical reaction? *Free Radic Biol Med.* 2019 Mar;133:153-161. doi: 10.1016/j.freeradbiomed.2018.09.008. Epub 2018 Sep 12.
3. W. Lou, H.C. Ting, C.J. Reynolds, Y.Y. Tyurina, V.A. Tyurin, Y. Li, J. Ji, W. Yu, Z. Liang, **D.A. Stoyanovsky**, T.S. Anthonymuthu, M.A. Frasso, P. Wipf, J.S. Greenberger, H. Bayir, V.E. Kagan, M.L. Greenberg, Genetic re-engineering of polyunsaturated phospholipid profile of *Saccharomyces cerevisiae* identifies a novel role for Cld1 in mitigating the effects of cardiolipin peroxidation, *Biochim Biophys Acta.* June 20; doi: 10.1016/j.bbali.2018.06.016. [Epub ahead of print].
4. Scott, M. J., Billiar, T. R., **Stoyanovsky, D. A.** *N*-tert-butylmethanimine *N*-oxide is an efficient spin-trapping probe for EPR analysis of glutathione thiyl radical. *Sci. Rep.* 2016 Dec. 12; 6: 38773. doi: 10.1038/srep38773.
5. **Stoyanovsky DA**, Jiang J, Murphy MP, Epperly M, Zhang X, Li S, Greenberger J, Kagan V, Bayir H. Design and Synthesis of a Mitochondria-Targeted Mimic of Glutathione Peroxidase, MitoEbselen-2, as a Radiation Mitigator. *ACS Medicinal Chemistry Letters.* 2014 Dec 11; 5 (12):1304-1307. PMCID: PMC4266336. PMID: 25530831. doi: 10.1021/ml5003635.
6. Yanamala N, Kapralov AA, Djukic M, Peterson J, Mao G, Klein-Seetharaman J, **Stoyanovsky DA**, Stursa J, Neuzil J, Kagan VE. Structural re-arrangement and peroxidase activation of cytochrome c by anionic analogues of vitamin E, tocopherol succinate and tocopherol phosphate. *The Journal of Biological Chemistry.* 2014 Nov 21; 289 (47):32488-98. PMCID: PMC4239604. PMID: 25278024. doi: 10.1074/jbc.M114.601377.
7. **Stoyanovsky DA**, Sparvero LJ, Amoscato AA, He RR, Watkins S, Pitt BR, Bayir H, Kagan VE. Improved spatial resolution of matrix-assisted laser desorption/ionization imaging of lipids in the brain by alkylated derivatives of 2,5-dihydroxybenzoic acid. *Rapid Communications in Mass Spectrometry : RCM.* 2014 Mar 15; 28 (5):403-12. PMCID: PMC3973445. PMID: 24497278. doi: 10.1002/rcm.6796.
8. Fatfat M, Merhi RA, Rahal O, Stoyanovsky DA, Zaki A, Haidar H, Kagan VE, Gali-

- Muhtasib H, Machaca K. Copper chelation selectively kills colon cancer cells through redox cycling and generation of reactive oxygen species. *BMC Cancer*. 2014; 14:527. PMID: PMC4223620. PMID: 25047035. doi: 10.1186/1471-2407-14-527.
9. **Stoyanovsky DA**, Scott MJ, Billiar TR. Glutathione and thioredoxin type 1 cooperatively denitrosate HepG2 cells-derived cytosolic S-nitrosoproteins. *Organic & biomolecular chemistry*. 2013 Jun 7. PMID: 23743503.
 10. Thambiayya K, Wasserloos K, Kagan VE, **Stoyanovsky D**, Pitt BR. A critical role for increased labile zinc in reducing sensitivity of cultured sheep pulmonary artery endothelial cells to LPS-induced apoptosis. *American journal of physiology. Lung cellular and molecular physiology*. 2012 Jun 15; 302 (12):L1287-95. PMID: PMC3379046. PMID: 22523284.
 11. Tyurina YY, Tungekar MA, Jung MY, Tyurin VA, Greenberger JS, **Stoyanovsky DA**, Kagan VE. Mitochondria targeting of non-peroxidizable triphenylphosphonium conjugated oleic acid protects mouse embryonic cells against apoptosis: role of cardiolipin remodeling. *FEBS Letters*. 2012 Feb 3; 586 (3):235-41. PMID: PMC3273856. PMID: 22210054. doi: 10.1016/j.febslet.2011.12.016.
 12. **Stoyanovsky DA**, Huang Z, Jiang J, Belikova NA, Tyurin V, Epperly MW, Greenberger JS, Bayir H, Kagan VE. A manganese-porphyrin complex decomposes H₂O₂, inhibits apoptosis, and acts as a radiation mitigator in vivo. *ACS medicinal chemistry letters*. 2011 Nov 10; 2 (11):814-817. PMID: PMC3254103. PMID: 22247787.
 13. **Stoyanovsky DA**, Maeda A, Atkins JL, Kagan VE. Assessments of thiyl radicals in biosystems: difficulties and new applications. *Analytical Chemistry*. 2011 Sep 1; 83 (17):6432-8. PMID: 21591751.
 14. Li HH, Xu J, Wasserloos KJ, Li J, Tyurina YY, Kagan VE, Wang X, Chen AF, Liu ZQ, **Stoyanovsky D**, Pitt BR, Zhang LM. Cytoprotective effects of albumin, nitrosated or reduced, in cultured rat pulmonary vascular cells. *American journal of physiology. Lung cellular and molecular physiology*. 2011 Apr; 300 (4):L526-33. PMID: PMC3075101. PMID: 21239532.
 15. 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**, Bayir H, Pitt BR, Epperly MW, Greenberger JS, Kagan VE. A mitochondria-targeted inhibitor of cytochrome c peroxidase mitigates radiation-induced death. *Nature communications*. 2011; 2:497. PMID: PMC3557495. PMID: 21988913.
 16. Huang Z, Jiang J, Belikova NA, **Stoyanovsky DA**, Kagan VE, Mintz AH. Protection of normal brain cells from γ -irradiation-induced apoptosis by a mitochondria-targeted triphenyl-phosphonium-nitroxide: a possible utility in glioblastoma therapy. *Journal of neuro-oncology*. 2010 Oct; 100 (1):1-8. PMID: 20835910.
 17. **Stoyanovsky DA**, Kapralov A, Huang Z, Maeda A, Osipov A, Hsia CJ, Ma L, Kochanek PM, Bayr H, Kagan VE. Unusual peroxidase activity of polynitroxylated pegylated hemoglobin: Elimination of H₂O₂ coupled with intramolecular oxidation of nitroxides. *Biochemical and Biophysical Research Communications*. 2010 Aug 20; 399 (2):139-43. PMID: 20643098.
 18. Sengupta R, Billiar TR, Kagan VE, **Stoyanovsky DA**. Nitric oxide and thioredoxin type 1 modulate the activity of caspase 8 in HepG2 cells. *Biochemical and Biophysical Research Communications*. 2010 Jan 1; 391 (1):1127-30. PMID: PMC2812598. PMID: 20005201. doi: 10.1016/j.bbrc.2009.12.036.
 19. Jiang J, **Stoyanovsky DA**, Belikova NA, Tyurina YY, Zhao Q, Tungekar MA, Kapralova V, Huang Z, Mintz AH, Greenberger JS, Kagan VE. A mitochondria-targeted triphenylphosphonium-conjugated nitroxide functions as a

- radioprotector/mitigator. *Radiation Research*. 2009 Dec; 172 (6):706-17. PMID: 19929417. doi: 10.1667/RR1729.1.
20. Kagan VE, Wipf P, **Stoyanovsky D**, Greenberger JS, Borisenko G, Belikova NA, Yanamala N, Samhan Arias AK, Tungekar MA, Jiang J, Tyurina YY, Ji J, Klein-Seetharaman J, Pitt BR, Shvedova AA, Bayir H. Mitochondrial targeting of electron scavenging antioxidants: Regulation of selective oxidation vs random chain reactions. *Advanced drug delivery reviews*. 2009 Nov 30; 61 (14):1375-85. PMID: 19716396.
 21. Sengupta R, Billiar TR, Atkins JL, Kagan VE, **Stoyanovsky DA**. Nitric oxide and dihydrolipoic acid modulate the activity of caspase 3 in HepG2 cells. *FEBS Letters*. 2009 Nov 3; 583 (21):3525-30. PMID: 19822150. doi: 10.1016/j.febslet.2009.10.016.
 22. Belikova NA, Jiang J, **Stoyanovsky DA**, Glumac A, Bayir H, Greenberger JS, Kagan VE. Mitochondria-targeted (2-hydroxyamino-vinyl)-triphenyl-phosphonium releases NO(.) and protects mouse embryonic cells against irradiation-induced apoptosis. *FEBS Letters*. 2009 Jun 18; 583 (12):1945-50. PMID: 19427865. doi: 10.1016/j.febslet.2009.04.050.
 23. Kagan VE, Bayir HA, Belikova NA, Kapralov O, Tyurina YY, Tyurin VA, Jiang J, **Stoyanovsky DA**, Wipf P, Kochanek PM, Greenberger JS, Pitt B, Shvedova AA, Borisenko G. Cytochrome c/cardioplipin relations in mitochondria: a kiss of death. *Free Radical Biology & Medicine*. 2009 Jun 1; 46 (11):1439-53. PMID: 19285551. doi: 10.1016/j.freeradbiomed.2009.03.004.
 24. Kapadia MR, Eng JW, Jiang Q, **Stoyanovsky DA**, Kibbe MR. Nitric oxide regulates the 26S proteasome in vascular smooth muscle cells. *Nitric oxide : biology and chemistry / official journal of the Nitric Oxide Society*. 2009 Jun; 20 (4):279-88. PMID: 19233305.
 25. Sengupta R, Billiar TR, **Stoyanovsky DA**. Studies toward the analysis of S-nitrosoproteins. *Organic & biomolecular chemistry*. 2009 Jan 21; 7 (2):232-4. PMID: 19109666.
 26. Kagan VE, Bayir A, Bayir H, **Stoyanovsky D**, Borisenko GG, Tyurina YY, Wipf P, Atkinson J, Greenberger JS, Chapkin RS, Belikova NA. Mitochondria-targeted disruptors and inhibitors of cytochrome c/cardioplipin peroxidase complexes: a new strategy in anti-apoptotic drug discovery. *Molecular nutrition & food research*. 2009 Jan; 53 (1):104-14. PMID: 18979502.
 27. Borisenko GG, Kapralov AA, Tyurin VA, Maeda A, **Stoyanovsky DA**, Kagan VE. Molecular design of new inhibitors of peroxidase activity of cytochrome c/cardioplipin complexes: fluorescent oxadiazole-derivatized cardioplipin. *Biochemistry*. 2008 Dec 23; 47 (51):13699-710. PMID: 19053260.
 28. **Stoyanovsky DA**, Vlasova II, Belikova NA, Kapralov A, Tyurin V, Greenberger JS, Kagan VE. Activation of NO donors in mitochondria: peroxidase metabolism of (2-hydroxyamino-vinyl)-triphenyl-phosphonium by cytochrome c releases NO and protects cells against apoptosis. *FEBS letters*. 2008 Mar 5; 582 (5):725-8. PMID: 18258194.
 29. Kagan VE, Jiang J, Bayir H, **Stoyanovsky DA**. Targeting nitroxides to mitochondria: location, location, location, and ...concentration: highlight commentary on "Mitochondria superoxide dismutase mimetic inhibits peroxide-induced oxidative damage and apoptosis: role of mitochondrial superoxide". *Free Radic Biol Med* 02 Aug 2007; 43(3): 348-50.
 30. Sengupta R, Ryter SW, Zuckerbraun BS, Tzeng E, Billiar TR, **Stoyanovsky DA**. Thioredoxin catalyzes the denitrosation of low-molecular mass and protein S-nitrosothiols. *Biochemistry*. 2007 Jul 17; 46 (28):8472-83. PMID: 17580965.
 31. Tyurina YY, Basova LV, Konduru NV, Tyurin VA, Potapovich AI, Cai P, Bayir H,

- Stoyanovsky D**, Pitt BR, Shvedova AA, Fadeel B, Kagan VE. Nitrosative stress inhibits the aminophospholipid translocase resulting in phosphatidylserine externalization and macrophage engulfment: implications for the resolution of inflammation. *The Journal of biological chemistry*. 2007 Mar 16; 282 (11):8498-509. PMID: 17229723.
32. Zuckerbraun BS, **Stoyanovsky DA**, Sengupta R, Shapiro RA, Ozanich BA, Rao J, Barbato JE, Tzeng E. Nitric oxide-induced inhibition of smooth muscle cell proliferation involves S-nitrosation and inactivation of RhoA. *American journal of physiology. Cell physiology*. 2007 Feb; 292 (2):C824-31. PMID: 16914531.
 33. Vlasova II, Tyurin VA, Kapralov AA, Kurnikov IV, Osipov AN, Potapovich MV, **Stoyanovsky DA**, Kagan VE. Nitric oxide inhibits peroxidase activity of cytochrome c-cardiolipin complex and blocks cardiolipin oxidation. *The Journal of biological chemistry*. 2006 May 26; 281 (21):14554-62. PMID: 16543234.
 34. **Stoyanovsky DA**, Tyurina YY, Tyurin VA, Anand D, Mandavia DN, Gius D, Ivanova J, Pitt B, Billiar TR, Kagan VE. Thioredoxin and lipoic acid catalyze the denitrosation of low molecular weight and protein S-nitrosothiols. *Journal of The American Chemical Society*. 2005 Nov 16; 127 (45):15815-23. PMID: 16277524.
 35. Cheong E, Tumblev V, **Stoyanovsky D**, Salama G. Effects of pO₂ on the activation of skeletal muscle ryanodine receptors by NO: a cautionary note. *Cell calcium*. 2005 Nov; 38 (5):481-8. PMID: 16099502.
 36. Chen T, Pearce LL, Peterson J, **Stoyanovsky D**, Billiar TR. Glutathione depletion renders rat hepatocytes sensitive to nitric oxide donor-mediated toxicity. *Hepatology (Baltimore, Md.)*. 2005 Sep; 42 (3):598-607. PMID: 16116630.
 37. Cheong E, Tumblev V, Abramson J, Salama G, **Stoyanovsky DA**. Nitroxyl triggers Ca²⁺ release from skeletal and cardiac sarcoplasmic reticulum by oxidizing ryanodine receptors. *Cell calcium*. 2005 Jan; 37 (1):87-96. PMID: 15541467.
 38. **Stoyanovsky DA**, Schor NF, Nylander KD, Salama G. Effects of pH on the cytotoxicity of sodium trioxodinitrate (Angeli's salt). *Journal of medicinal chemistry*. 2004 Jan 1; 47 (1):210-7. PMID: 14695834.
 39. Ivanova J, Salama G, Clancy RM, Schor NF, Nylander KD, **Stoyanovsky DA**. Formation of nitroxyl and hydroxyl radical in solutions of sodium trioxodinitrate: effects of pH and cytotoxicity. *The Journal of biological chemistry*. 2003 Oct 31; 278 (44):42761-8. PMID: 12920123.
 40. Novakov CP, **Stoyanovsky DA**. Comparative metabolism of N-tert-butyl-N-[1-(1-oxy-pyridin-4-yl)-ethyl]- and N-tert-butyl-N-(1-phenyl-ethyl)-nitroxide by the cytochrome P450 monooxygenase system. *Chemical research in toxicology*. 2002 May; 15 (5):749-53. PMID: 12018998.
 41. Novakov CP, Feierman D, Cederbaum AI, **Stoyanovsky DA**. An ESR and HPLC-EC assay for the detection of alkyl radicals. *Chemical research in toxicology*. 2001 Sep; 14 (9):1239-46. PMID: 11559038.
 42. Caro AA, Cederbaum AI, **Stoyanovsky DA**. Oxidation of the ketoxime acetoxime to nitric oxide by oxygen radical-generating systems. *Nitric oxide : biology and chemistry / official journal of the Nitric Oxide Society*. 2001 Aug; 5 (4):413-24. PMID: 11485379.
 43. Clancy R, Cederbaum AI, **Stoyanovsky DA**. Preparation and properties of S-nitroso-L-cysteine ethyl ester, an intracellular nitrosating agent. *Journal of medicinal chemistry*. 2001 Jun 7; 44 (12):2035-8. PMID: 11384248.
 44. Clancy R, Rediske J, Koehne C, **Stoyanovsky D**, Amin A, Attur M, Iyama K, Abramson SB. Activation of stress-activated protein kinase in osteoarthritic cartilage: evidence for nitric oxide dependence. *Osteoarthritis and cartilage / OARS, Osteoarthritis Research Society*. 2001 May; 9 (4):294-9. PMID: 11399092.
 45. Sakurai K, **Stoyanovsky DA**, Fujimoto Y, Cederbaum AI. Mitochondrial permeability

- transition induced by 1-hydroxyethyl radical. *Free radical biology & medicine*. 2000 Jan 15; 28 (2):273-80. PMID: 11281295.
46. Puntarulo S, **Stoyanovsky DA**, Cederbaum AI. Interaction of 1-hydroxyethyl radical with antioxidant enzymes. *Archives of biochemistry and biophysics*. 1999 Dec 15; 372 (2):355-9. PMID: 10600175.
 47. **Stoyanovsky DA**, Cederbaum AI. Metabolism of carbon tetrachloride to trichloromethyl radical: An ESR and HPLC-EC study. *Chemical research in toxicology*. 1999 Aug; 12 (8):730-6. PMID: 10458707.
 48. **Stoyanovsky DA**, Cederbaum AI. Metabolites of acetaminophen trigger Ca²⁺ release from liver microsomes. *Toxicology letters*. 1999 May 20; 106 (1):23-9. PMID: 10378447.
 49. **Stoyanovsky DA**, Melnikov Z, Cederbaum AI. ESR and HPLC-EC analysis of the interaction of hydroxyl radical with DMSO: rapid reduction and quantification of POBN and PBN nitroxides. *Analytical chemistry*. 1999 Feb 1; 71 (3):715-21. PMID: 9989388.
 50. **Stoyanovsky DA**, Clancy R, Cederbaum AI. Decomposition of Sodium Trioxodinitrate (Angeli's Salt) To Hydroxyl Radical: An ESR Spin-Trapping Study. *Journal of the American Chemical Society*. 1999; 121:5093-5094.
 51. **Stoyanovsky DA**, Cederbaum AI. ESR and HPLC-EC analysis of ethanol oxidation to 1-hydroxyethyl radical: rapid reduction and quantification of POBN and PBN nitroxides. *Free radical biology & medicine*. 1998 Sep; 25:536-45. PMID: 9741590.
 52. **Stoyanovsky DA**, Cederbaum AI. Redox-cycling of iron ions triggers calcium release from liver microsomes. *Free radical biology & medicine*. 1998 Mar 15; 24 (5):745-53. PMID: 9586805.
 53. **Stoyanovsky DA**, Wu D, Cederbaum AI. Interaction of 1-hydroxyethyl radical with glutathione, ascorbic acid and alpha-tocopherol. *Free radical biology & medicine*. 1998 Jan 1; 24 (1):132-8. PMID: 9436622.
 54. **Stoyanovsky D**, Murphy T, Anno PR, Kim YM, Salama G. Nitric oxide activates skeletal and cardiac ryanodine receptors. *Cell calcium*. 1997 Jan; 21 (1):19-29. PMID: 9056074.
 55. **Stoyanovsky DA**, Cederbaum AI. Thiol oxidation and cytochrome P450-dependent metabolism of CCl₄ triggers Ca²⁺ release from liver microsomes. *Biochemistry*. 1996 Dec 10; 35 (49):15839-45. PMID: 8961948.
 56. **Stoyanovsky DA**, Goldman R, Jonnalagadda SS, Day BW, Claycamp HG, Kagan VE. Detection and characterization of the electron paramagnetic resonance-silent glutathionyl-5,5-dimethyl-1-pyrroline N-oxide adduct derived from redox cycling of phenoxyl radicals in model systems and HL-60 cells. *Archives of Biochemistry and Biophysics*. 1996 Jun 1; 330 (1):3-11. PMID: 8651701.
 57. **Stoyanovsky DA**, Osipov AN, Quinn PJ, Kagan VE. Ubiquinone-dependent recycling of vitamin E radicals by superoxide. *Archives of Biochemistry and Biophysics*. 1995 Nov 10; 323 (2):343-51. PMID: 7487097.
 58. Ritov VB, Goldman R, **Stoyanovsky DA**, Menshikova EV, Kagan VE. Antioxidant paradoxes of phenolic compounds: peroxy radical scavenger and lipid antioxidant, etoposide (VP-16), inhibits sarcoplasmic reticulum Ca(2+)-ATPase via thiol oxidation by its phenoxyl radical. *Archives of Biochemistry and Biophysics*. 1995 Aug 1; 321 (1):140-52. PMID: 7639514.
 59. **Stoyanovsky DA**, Goldman R, Claycamp HG, Kagan VE. Phenoxyl radical-induced thiol-dependent generation of reactive oxygen species: implications for benzene toxicity. *Archives of Biochemistry and Biophysics*. 1995 Mar 10; 317 (2):315-23. PMID: 7893144.
 60. **Stoyanovsky DA**, Goldman R, Darrow RM, Organisciak DT, Kagan VE. Endogenous ascorbate regenerates vitamin E in the retina directly and in

- combination with exogenous dihydrolipoic acid. *Current Eye Research*. 1995 Mar; 14 (3):181-9. PMID: 7796601.
61. Kagan VE, Yalowich JC, Day BW, Goldman R, Gantchev TG, **Stoyanovsky DA**. Ascorbate is the primary reductant of the phenoxyl radical of etoposide in the presence of thiols both in cell homogenates and in model systems. *Biochemistry*. 1994 Aug 16; 33 (32):9651-60. PMID: 8068642.
 62. **Stoyanovsky DA**, Salama G, Kagan VE. Ascorbate/iron activates Ca(2+)-release channels of skeletal sarcoplasmic reticulum vesicles reconstituted in lipid bilayers. *Archives of Biochemistry and Biophysics*. 1994 Jan; 308 (1):214-21. PMID: 8311455.
 63. Gantchev TG, van Lier JE, **Stoyanovsky DA**, Yalowich JC, Kagan VE. Interactions of phenoxyl radical of antitumor drug, etoposide, with reductants in solution and in cell and nuclear homogenates: electron spin resonance and high-performance liquid chromatography. *Methods in Enzymology*. 1994; 234:631-42. PMID: 7808339.
 64. Kagan VE, Serbinova EA, **Stoyanovsky DA**, Khwaja S, Packer L. Assay of ubiquinones and ubiquinols as antioxidants. *Methods in Enzymology*. 1994; 234:343-54. PMID: 7808306.
 65. Bezprozvanny IB, Ondrias K, Kaftan E, **Stoyanovsky DA**, Ehrlich BE. Activation of the calcium release channel (ryanodine receptor) by heparin and other polyanions is calcium dependent. *Molecular biology of the cell*. 1993 Mar; 4 (3):347-52. PMCID: PMC300932. PMID: 7683508.
 66. **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 research communications*. 1993; 19 (6):371-86. PMID: 8168727.
 67. Petkov VV, **Stoianovski D**, Petkov VD, Vyglanova Iu. [Lipid peroxidation changes in the brain in fetal alcohol syndrome]. *Biulleten' eksperimental'noi biologii i meditsiny*. 1992 May; 113 (5):500-2. PMID: 1421268.
 68. **Stoianovski DA**, Kagan VE, Afanas'ev IB. [The effect of ascorbic acid on the breakdown of arachidonate 15-hydroperoxide in the presence of iron salts and complexes]. *Biulleten' Eksperimental'noi Biologii I Meditsiny*. 1990 Nov; 110 (11):475-8. PMID: 2128036.
 69. 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. *Toxicology Letters*. 1989 May; 47 (2):119-23. PMID: 2741175.
 70. **Stoyanovsky DA**, Kagan VE, Packer L. Iron binding to alpha-tocopherol-containing phospholipid liposomes. *Biochemical and Biophysical Research Communications*. 1989 Apr 28; 160 (2):834-8. PMID: 2719700.
 71. 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. *Proceedings of The Society For Experimental Biology and Medicine*. Society For Experimental Biology and Medicine (New York, N.Y.). 1989 Apr; 190 (4):365-8. PMID: 2928349.

Published Abstracts

1. Tyurina Y, Tungekar M, Jung M, Tyurin V, Stoyanovsky D, Kagan VE. Mitochondria targeting of non-peroxidizable triphenylphosphonium conjugated oleic acid protects mouse embryonic cells against apoptosis: Role of cardiolipin remodeling. [abstract]. In: 51th Annual Meeting for Society of Toxicology; *The Toxicologist*, v. 126. 2012 Mar 11-15 ; San Francisco, CA 2012. 438.
2. Atkinson J, Kapralov A, Yanamala N, Amoscato AA, Pearce LL, Peterson J, Huang

- Z, Jiang AND Kagan VE, Samhan Arias A, Maeda A, Feng W, Wasserloos K, Belikova N, Tyurin V, Wang H, Fletcher J, Wang Y, Vlasova I, Klein-Seetharaman J, Stoyanovsky D*, Bayir H, Pitt BR, Epperly M, Greenberger JS, Kagan VE. A mitochondria-targeted imidazole-substituted fatty acids inhibit cytochrome c peroxidase and mitigate radiation induced death. [abstract]. In: 51th Annual Meeting for Society of Toxicology; The Toxicologist, v.126. 2012 Mar 11-15 ; San Francisco, CA 2012. 439.
3. Tyurina Y, Tungekar MA, Jung M, Tyurin VA, Stoyanovsky D, Kagan VE. Mitochondria targeting of nonperoxidizable triphenylphosphonium-conjugated oleic acid protects mouse embryonic cells against apoptosis: role of cardiolipin. In: 51st Annual Meeting for Society Toxicology; The Toxicologist. 2012 Mar 11-15 ; San Francisco CA Reston, VA: Oxford University Press, 2012. 438-439.
 4. Atkinson J, Kapralov A, Yanamala N, Tyurina Y, Amoscato AA, Pearce LL, Peterson J, Huang Z, Jiang AND Kagan VE, Samhan Arias A, Maeda A, Feng W, Belikova N, Tyurin VA, Wang H, Fletcher J, Wang Y, Vlasova I, Klein JH, Stoyanovsky D*, Bayir H, Pitt BR, Epperly M, Greenberger JS, Kagan VE. A Mitochondria-targeted imidazole –substituted fatty acid inhibits cytochrome C peroxidase and mitigates radiation-induced death. In: 51st Annual Meeting for Society Toxicology; The Toxicologist. 2012 Mar 11-15 ; San Francisco CA Reston, VA: Oxford University Press, 2012. 439.
 5. Belikova N, Jiang AND Kagan VE, Kapralova V, Tyurina Y, Greenberger JS, Stoyanovsky D*, Kagan VE. Peroxidase-actvated mitochondria-targeted NO-donor protects mouse embryonic cells against irradiation-induced injury. [abstract]. In: 48th Annual Meeting for Society of Toxicology; The Toxicologist, v. 108. 2009 Mar 15-19 ; Balti 2009. 321.
 6. Jiang AND Kagan VE, Stoyanovsky D*, Belikova N, Zhao H, Tyurina Y, Tungekar M, Kapralova V, Greenberger JS, Kagan VE. Mitochondria-targeted triphenylphosphonium conjugated nitroxide function as a radioprotector. [abstract]. In: 48th Annual Meeting for Society of Toxicology; The Toxicologist, v. 108. 2009 Mar 15-19 ; Baltimore, MD 2009. 321.
 7. Tyurina Y, Potapovich A, Tyurin V, Cai P, Konduru N, Bayir H, Fadeel B, Stoyanovsky D*, Shvedova A, Kagan VE. Nitrosative stress induces phosphatidylserine externalization: Signaling role in phagocytosis. [abstract]. In: 45th Annual Meeting or Society of Toxicology; The Toxicologist, v.90. 2006 Mar 5-9 ; San Diego, CA 2006. 237.
 8. Osipov A, Kurnikov IV, Vladimirov Y, Belikova N, Stoyanovsky D*, Potapovich A, Borisenko G, Kapralov A, Tyurina Y, Tyurin V, Jiang AND Kagan VE, Kini V, Lysytsya A, Ritov V, Choi AM, Ryter S, Kagan VE. Cardiolipin destabilizes cytochrome c in mitochondria and makes its catalytic site accessible to small ligands: Role in apoptosis. [abstract]. In: 44th Annual Meeting for Society of Toxicology; The Toxicologist, v. 84. 2005 Mar 6-10 ; New Orleans, LA 2005. 468.
 9. Tyurin VA, Zhao Q, Jiang J, Borisenko G, Gandley RE, Tyurina Y, Bayir H, Kapralov A, Shvedova A, Komarov A, Hubel CA, Taylor R, Stoyanovsky D*, Kagan VE. Assesment of S-nitrosothiols in biological fluids: Content of S-niretosothiols in plasma. [abstract]. In: 43rd Annual Meeting for Society of Toxicology; Toxicol. Sci., 78 (NS-1). 2004 Mar 21-25 ; Baltimore, MD 2004. 411.
 10. Stoyanovsky D*, Tyurina Y, Osipov AN, Kagan VE. Antioxidant interactions of vitamin E and coenzyme Q: Role of superoxide. [abstract]. In: The VII International

RESEARCH

Current research support

Funding Agency: NIH
Grant Number: U19AI068021
Title of Grant: Innovative Medicinal Chemistry, Core
Role on Grant: PI (multiple)
Years Inclusive: 9/30/2015 - 8/31/2020
Percent Effort: 30.0 %
Total Direct Costs: \$500,000
Total Amount Awarded: \$781,250

Funding Agency: NIH
Grant Number: 5P01HL114453-05
Title of Grant: Cardiolipin as a Novel Mediator of Acute Lung Injury
Principal Investigator: Mallampalli
Role on Grant: Co-Investigator
Years Inclusive: 01/03/2014 - 12/31/2018
Percent Effort: 10 %
Total Direct Costs: \$9,453
Total Amount Awarded: \$6,144

Funding Agency: NIH
Grant Number: 5R01NS084604-05
Title of Grant: Mitochondria-Targeted Redox Therapy for Cerebral Ischemia in the Developing Brain
Role on Grant: Co-Investigator
Years Inclusive: 03/15/2014 - 02/01/2019
Percent Effort: 5 %
Total Direct Costs: \$4,727
Total Amount Awarded: \$3,072

Funding Agency: NIH
Grant Number: 5P01HL114453-05
Title of Grant: Oxidative Lipidomics in Pediatric Traumatic Brain Injury
Principal Investigator: Kagan
Role on Grant: Co-Investigator
Years Inclusive: 07/01/2008 - 04/30/2019
Percent Effort: 20 %
Total Direct Costs: \$18,906
Total Amount Awarded: \$12,100

Funding Agency: NIH
Grant Number: 114551

Title of Grant: Nitric Oxide and Hepatic Function in Sepsis and Trauma
Principal Investigator: Billiar
Role on Grant: Co-Investigator
Years Inclusive: 4/1/1990 - 6/30/2018
Percent Effort: 3.0 %
Total Direct Costs: \$2,865
Total Amount Awarded: \$4,476

Funding Agency: NIH
Grant Number: 114551
Title of Grant: Signature-Directed Sequential Delivery of Radiation Mitigators
Principal Investigator: Kagan
Role on Grant: Co-Investigator
Years Inclusive: 4/1/1990 - 6/30/2018
Percent Effort: 11 %
Total Direct Costs: \$10,398
Total Amount Awarded: \$16,247

Past research support

Funding Agency: NIH
Grant Number: U19AI068021
Title of Grant: Innovative Medicinal Chemistry, Core
Principal Investigator: Stoyanovsky
Role on Grant: PI (multiple)
Years Inclusive: 9/30/2010 - 8/31/2015
Percent Effort: 25.0 %
Total Direct Costs: \$300,000
Total Amount Awarded: \$468,750

Funding Agency: NIH
Grant Number: U19AI068021
Title of Grant: CMCR Pilot Projects, Synthesis of mitochondrial nitric oxide-releasing prodrugs
Principal Investigator: Stoyanovsky
Years Inclusive: 8/30/2006 - 8/30/2009
Percent Effort: 10.0 %
Total Direct Costs: \$120,000
Total Amount Awarded: \$187,500

Funding Agency: NIH
Grant Number: ES009648
Title of Grant: HPLC detection of radical intermediates
Role on Grant: PI (sole)
Years Inclusive: 6/1/2000 - 6/30/2004
Percent Effort: 50.0 %
Total Direct Costs: \$450,000

Total Amount Awarded: \$703,125

OTHER SCHOLARLY ACTIVITIES

Manuscript Reviewer

Analytical Chemistry
Toxicology and Applied Pharmacology
RSC Advances
Chemical Communications
Analyst
New Journal of Chemistry
Organic & Biomolecular Chemistry
Molecular BioSystems
Bioanalytical chemistry
Journal of Medicinal Chemistry
Organic Letters
The Journal of Organic Chemistry
Journal of the American Chemical Society

INVITED PRESENTATIONS

1. 7th International Symposium on Spin Trapping. 2002, Chapel Hill, NC. Invited speaker.
2. Jiang J, Stoyanovsky D, Maeda A, Greenberger JS, Kagan VE. Are Mitochondrial Reactive Oxygen Species Required for Autophagy? Poster presented at: 50th Annual Meeting of the Society of Toxicology; 2011 Mar 6-10; Washington.
3. Jiang J, Stoyanovsky D, Belikova NA, Tyurina YY, Zhao Q, Tungekar MA, Kapralova V, Huang Z, Mintz AH, Greenberger JS, Kagan VE. A Mitochondria-Targeted Triphenylphosphonium-Conjugated Nitroxide Functions as a Radioprotector/Mitigator. Poster presented at: 48th Annual Meeting of the Society of Toxicology; 2008 Mar 18-23; Philadelphia, PA.

OTHER PRESENTATIONS

1. Tyurin V, Tyurina Y, Potapovich A, Cai P, Konduru N, Bayir H, Fadeel B, Stoyanovsky D*, Shvedova A, Kagan VE. S-Nitrosation and phosphatidylserine externalization on the cell surface: A new signaling role in apoptosis and phagocytosis. Presented at: 1st International Conference on Nanotoxicology: Biomedical Aspects.; 2006 Jan 29-Feb 1; Miami, FL.

MENTORING AND ADVISING

Undergraduate Students

Year(s)	Student's Name & Department/Degree/Discipline	References
2004 - 2004	Dhara Mandavia Denitrosation of S-nitrosoproteins by thioredoxin	34
2004 – 2005	Deepthi Anand Denitrosation of S-nitrosoproteins by thioredoxin	34
2012 – 2012	Mark Biedka	245th ACS National Meeting, New Orleans, LA. 2013, Poster Presentation

Postdoc or Fellow

2014	Qian Sun Surgery Regulation of caspase 1 by nitric oxide and thioredoxin type 1 Current position: Clinical Chemistry Fellow, NIH, Washington D.C.	
2013 – 2014	Marcelo Montenegro Redox biochemistry of HMGB1 Current position: Senior Researcher, Karolinska Institute, Stockholm, Sweden	
2012 – 2013	L. J. Sparvero MALDI-MS analysis of lipids Current position: Postdoctoral fellow, Dept. of EOH, University of Pittsburgh, Pittsburgh	7
2010 – 2011	Akihiro Maeda Immuno-spin trapping analysis of S-nitrosoproteins	13

Current Position: Istituto Clinico Humanitas
IRCCS, Rozzano MI, Italy

2009 – 2010 Natalia Belikova 12, 16, 22
Synthesis and evaluation of
triphenylphosphonium-derived nitroxides as
radiation mitigators

Current position: Analytical Director at SGS
Life Science Services, Lincolnshire, MI

2006 – 2009 Rajib Sengupta 18, 21, 25, 30, 32
Denitrosation of S-nitrosoproteins by
thioredoxin

Current position: Asst. Professor, Amity
Institute of Biotechnology, Kolkata, India

2003 – 2005 Juliana Ivanova-Tumbeva 34, 39
Chemistry and toxicology of nitroxyl

Current position: Associate Professor,
Faculty of Chemistry, Sofia University,
Sofia, Bulgaria, EU

2000 - 2002 Christo Novakov 40, 41
HPLC-EPR analysis of radical metabolites

Current Position: Associate Professor,
Bulgarian Academy of Sciences, Sofia,
Bulgaria, EU