

BIOGRAPHICAL SKETCH

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NAME ZhongMao Guo	POSITION TITLE Professor		
eRA COMMONS USER NAME zguo01			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Hubei Medical University, P. R. China.	B.S.	1973 - 1976	Medicine
Hubei Medical University, P. R. China.	M.D.	1978 - 1981	Cardiology/Physiology
University of TX Health Sci. Ctr at San Antonio.	Ph.D.	1993 - 1998	Molecular biology/ Physiology

Please refer to the application instructions in order to complete sections A, B, and C of the Biographical Sketch.

A. Positions and Honors

Positions:

- 1977 - 1978 Resident in Neurology, The First Hospital of Hubei Medical University, P. R. China.
1982 - 1984 Lecturer in Physiology, Hubei Medical University, P. R. China.
1985 - 1986 Postdoctoral Fellow, Division of Cardiology, Johns Hopkins University, Baltimore, MD.
1986 - 1989 Associate Professor in Physiology, Hubei Medical University, P. R. China.
1989 - 1993 Sr. Postdoc Associate in U.S. Army Med. Res. Inst. of Infectious Dis., Frederick, MD.
1998 - 1999 Postdoctoral Fellow in Physiology, Univ. TX Health Sci. Ctr at San Antonio, TX.
1999 - 2001 Assistant professor of Physiology, Univ. TX Health Sci. Ctr. at San Antonio, TX.
2001 - 2007 Associate Professor of Physiology, Meharry Medical College
2008 –present Interim Chair, Department of Cardiovascular Biology, Meharry Medical College.
2007 - present Professor of Physiology, Meharry Medical College

Honors

- 1985 Postdoctoral fellowship from World Health Organization.
1989 - 1993 Research Associateship from USA National Research Council: the possible involvement of mediators in the pathogenesis of Pichinde virus-induced disease in strain13 guinea pigs.
1996 George Sacher Award from Gerontological Society of America.
1997 National research service award from NIH.
1998 Award for excellence: graduate student in physiology from UTHSCSA.

B. Selected peer-reviewed publications from a list of 61:

1. Guo, Z. M. and G. L. Zhang: Effects of intracerebroventricular injection of naloxone on arterial pressure and the discharge of greater splanchnic nerves in hemorrhagic shock rabbits. *Acta Academiae Hubei* 2:64-70, 1981.
2. Kass D., **Z. M. Guo** and W. L. Maughan: Comparative influence of load versus inotropic state on indexes of ventricular contractility: experimental and theoretical analysis based on pressure-volume relationship. *Circulation* 76:1422-1428, 1987.
3. **Guo, Z. M.**, C. T. Liu and C. J. Peters: The possible involvement of β -endorphin in the Pathogenesis of Pichinde virus-induced disease in strain 13 guinea pigs. *Proc Soc Exp Biol Med* 200:343-348, 1992.
4. **Guo, Z. M.**, C. Qian, C. J. Peters, and C. T. Liu. Changes in platelet-activating factor, serotonin, and catecholamine concentrations in the brain, cerebrospinal fluid, and plasma of Pichinde virus-infected strain 13 guinea pigs. *Lab Anim Sci* 43: 569-574, 1993.
5. **Guo, Z. M.**, C. J. Peters, and C. T. Liu. Role of atrial natriuretic peptide in disturbed water and electrolyte metabolism in guinea pigs infected with Pichinde virus. *Lab Anim Sci* 45:484-492, 1995.
6. **Guo Z. M.**, A. R. Heydari, W. T. Wu, S. You, H. Yang, M. R. Sabia and A. Richardson: The characterization of gene specific DNA repair by primary cultures of rat hepatocytes. *J Cell Physiol.* 176:314-322.1998

7. **Guo, Z. M.**, A. R. Heydari and A. Richardson: Nucleotide excision repair of actively transcribed versus nontranscribed DNA in rat hepatocytes: effect of age and dietary restriction. *Exp. Cell Res.* 245: 228-238, 1998
8. **Guo, Z. M.**, H. Van Remmen and A. Richardson: Effect of cAMP-induced transcription on the repair of the phosphoenolpyruvate carboxykinase gene by hepatocytes isolated from young and old rats. *Mutation Res.* 409: 37-48, 1998
9. **Guo, Z.M.** and A. Richardson: Effect of age and dietary restriction on DNA repair. In: *Molecular biology of aging*. V. A. Bohr, B. Clark and T. Stevnsner, Eds. Munksgaard, Alfred Benzon Symposium 44: 362-372, 1999.
10. Richardson, A. and **Z.M. Guo**: Effect of aging on gene-specific repair. In: *The role of DNA damage and repair in cell aging*. B.A. Gilchrest and V.A. Bohr, Eds. The JAI Press, 1999.
11. Raffoul, J.J., **Z.M. Guo**, A. Soofi, and A.R. Heydari: Caloric Restriction and genomic stability. *J. Nutr. Health and Aging*, 3:100-109, 1999.
12. Pahlavani, M.A., D.M. Vargas, **Z.M. Guo** and A. Richardson: Normal immune function in young and old DNA polymerase- β deficient mice. *Immunology*, 72:17-21, 2000.
13. **Guo, Z.M.** and A. Richardson: DNA repair process. In *The Encyclopedia of Aging*, 3rd edition, G. Maddox, Eds. Springer Publishing Co., 2000.
14. Van Remmen, H., **ZM. Guo** and Richardson A: The anti-ageing action of calorie restriction. In *Ageing Vulnerability: causes and interventions*, Novartis Foundation Symposium 235, John Wiley & Sons, LTD, New York, 2001.
15. **Guo, Z.M.**, H. Van Remmen, H. Yang, X. Chen, J. Mele, J. Vijg, C.J. Epstein, Y.S. Ho and A. Richardson: Changes in expression of antioxidant enzymes affect of cell-mediated LDL oxidation and oxLDL-induced apoptosis in mouse aorta cells. *Arterioscler. Thromb. Vasc. Biol.* 21:1131-1138, 20001.
16. Hamilton M.L., **Z.M. Guo**, C.D. Fuller, H Van Remmen, W.F. Ward, S.N. Austad, D.A. Troyer, I. Thompson and A.R. Richardson: An accurate assessment of 8-oxo-2-deoxyguanosine levels in nuclear and mitochondrial DNA using the sodium iodine method to isolate DNA. *Nucleic Acid Res.* 29:2117-26, 2001.
17. **Guo, Z.M.**, H. Yang, and A. Richardson: Effect of age and food restriction on oxidative DNA damage and antioxidant enzyme activities in the mouse aorta. *Mech. Ageing Dev.* 122:1771-1786, 2001.
18. Van Remmen, H., M.D. Williams, **Z.M. Guo**, L. Estlack, H. Yang, E.J. Carson, C.J. Epstein, T.T. Huang and A. Richardson: Knockout mice heterozygous for *Sod2* show alterations in cardiac mitochondrial function and apoptosis. *Am. J. Physiol*, 281:H1422-H1432, 2001.
19. Hamilton, M., H. Van Remmen, J. A. Drake, H. Yang, **Z.M. Guo**, K. Kewitt, C. A. Walter and A. Richardson. Does Oxidative Damage to DNA Increase with Age? *Proc. Natl. Acad. Sci. U.S.A.* 98:10469-10474, 2001.
20. Dong, L. Q., F. J. Ramos, M.J. Wick, M. A. Lim, **Z.M. Guo**, R. Strong, A. Richardson and F. Liu. Cloning and characterization of a testis and brain-specific isoform of mouse 3'-phosphoinositide-dependent protein kinase-1, mPDK-1b. *Biochim. Biophys. Res. Comm.* 294:136-144, 2002.
21. Cabelof D.C., J.J. Raffoul, S. Yanamadala, C. Ganir, **Z.M. Guo** and Heydari A.R. Attenuation of DNA polymerase beta-dependent base excision repair and increased DMS-induced mutagenicity in aged mice. *Mutation Res.* 500:135-45, 2002.
22. Cabelof, D.C., J.J. Raffoul, S. Yanamadala, **Z.M. Guo**, and A.R. Heydari. Induction of DNA polymerase β -dependent base excision repair in response to oxidative stress *in vivo*. *Carcinogenesis* 23:1419-1425, 2002.
23. **Guo, Z.M.**, F. Raymuondo, H. Yang, Yuji Ikeno, A. Richardson and R. Reddick: Dietary restriction reduces atherosclerosis and oxidative lesions in the aorta of apolipoprotein E-deficient mice. *Mech. Ageing Dev.* 123:1121-1131, 2002.
24. Yang, H., M.J. Shi, H. VanRemmen, X.L. Chen, J. Vijg, A. Richardson and **Z.M. Guo**. Reduction of pressor response to vasoconstrictor agents by overexpression of catalase in mice. *Am. J. Hypert.* 16:1-5, 2003.
25. **Guo, Z.M.**, D.C. Cabelof, J.J. Raffoul, R.W. Sobol, S.H. Wilson, A. Richardson & A. R. Heydari. Base excision repair deficiency caused by polymerase β haploinsufficiency: Accelerated DNA damage and increased mutation response to carcinogens. *Cancer Res.* 63:5799-5807,2003
26. Yang, H. M. Uddin, M.J. Shi, M. Polley-Mandal and **Z.M. Guo**. Elevation of oxidative stress in the aorta of genetically hypertensive mice. *Mech. Ageing Dev.* 124:811—817, 2003.
27. Yang, H., M.J. Shi, J. Vijg, A. Richardson and **Z.M. Guo**. Attenuation of leukocyte-endothelium interaction by antioxidant enzymes. *Free Rad. Biol. Med.* 35:266-276, 2003.

28. Cabelof, D.C., S. Yanamadala, J.J. Raffoul, **Z.M. Guo**, A. Soofi, A. R. Heydari. Caloric restriction promotes genomic stability by induction of base excision repair and reversal of its age-related decline. *DNA Repair*. 2:295-307, 2003
29. Shi, M.J., H. Yang, E. D. Motley and **Z.M. Guo**. Overexpression of Cu/Zn-superoxide dismutase and/or catalase in mice inhibits smooth muscle cell proliferation. *A. J. Hypert.* 17: 450-456, 2004
30. Yang, H., M.J. Shi, J. Story, A. Richardson and **Z.M. Guo**. Food restriction attenuates age-related changes in mouse endothelial cell functions. *J. Gerontol. Biol. Sci.* 59:B316-B323, 2004.
31. Yang, H., L. J. Roberts, M.J. Shi, B.R. Ballard, L.C. Zhou, A. Richardson and **Z.M. Guo**. Retardation of atherosclerosis by overexpression of catalase or both Cu/Zn-superoxide and catalase in mice lacking apolipoprotein E. *Cir. Res.* 95:1075-1081, 2004.
32. Wu, D.F., H. Yang L.C. Zhou, W. Xiang, M.J. Shi, J.M. LaPlante, B.R. Ballard, and **Guo Z.M.** Heterozygous mutation at ataxia telangiectasia mutated gene aggravates hypercholesterolemia in mice lacking apolipoprotein E. *J. Lipid Res.* 46:1380-1387, 2005.
33. Zhou, L.C., W. Xiang, J. Potts, M. Floyd, C. Sharan, H. Yang, J. Ross, A.M. Nyanda and **Z.M. Guo**. Increase in peroxynitrite generation and reduction in extracellular superoxide dismutase activity in African-American patients with hypertension. *Free Rad. Biol. Med.* 41:1384-1391, 2006.
34. Zhou, L.C., M.J. Shi, **Z.M. Guo**, W. Brisbon, R. Hoover and H. Yang, Different Cytotoxic Injuries Induced by Lysophosphatidylcholine and 7-Ketocholesterol in Mouse Endothelial Cells. *Arterioscler. Endothelium* 13:213-226, 2006.
35. Wu, D.F., C. Sharan, H. Yang, J.S. Goodwin, L.C. Zhou, G.A. Grabowski and **Z.M. Guo**. Apolipoprotein E-deficient lipoproteins induce foam cell formation by downregulation of lysosomal hydrolases in macrophages. *J. Lipid Res.* 48:2571-2578, 2007.
36. **Guo, Z.M.**, Q. Ran, J. Roberts, L.Z. Zhou, A. Richardson, C. Sharan, D.F. Wu and H. Yang. Suppression of Atherogenesis by Overexpression of Phospholipid Hydroperoxide Glutathione Peroxidase in Apolipoprotein E-Deficient Mice. *Free Rad. Biol. Med.* 43:343-352, 2008
37. Wu, D.F., H. Yang, Y.F. Zhao, C. Sharan, J.S. Goodwin, L.C. Zhou, Y. Guo and **Z.M. Guo** 2-Aminopurine inhibits apolipoprotein E-deficient lipoprotein-induced foam cell formation. *J. Pharmacol. Exp. Ther.* 326:395-405, 2008.
38. Yang, H., L. Zhou, J. Robert, A. Ramesh, Z. F. Wang, Y. Zhao, X. Lin and **Z.M. Guo**. Differential effects of Cu/Zn-superoxide dismutase and catalase on benzo(a)pyrene-induced atherosclerosis in apolipoprotein E-deficient mice. *Atherosclerosis* (accepted and published online on April 8) 2009.
39. Wang, Z.F., L. Zhou, J. Robert, A. Ramesh, Y. Zhao, X Lin, H. Yang and **Z.M. Guo**. Overexpression of antioxidant enzymes accelerates detoxification of benzo(a)pyrene by upregulating phase I and Phase II enzyme system in mouse endothelial cells. *J. Biol. Chem.* (submitted) 2009.
40. **Guo,Z.M.**, L. Zhou, Z. Wang, H. Yang. Overexpression of Cu/Zn-superoxide dismutase and/or catalase reduces benzo(a)pyrene-induced atherosclerosis in apolipoprotein E-deficient mice. *The J. Heart Dis.* 6(1):28; 2008.
41. Yang H, Y. Zhao, D. Wu, C. Sharan and **Z.M. Guo**. Apolipoprotein E-deficient lipoproteins induce foam cell formation by activation of unfolded protein responses. *The J. Heart Dis.* 6(1):29; 2008.
42. Onumah OE, G. Jules, L. Zhou, H. Yang, Y. Zhao and **Z.M. Guo**. Overexpression of catalase inhibits mouse endothelial cell proliferation: The regulative role of hydrogen peroxide in cell cycle. *Free Rad. Biol. Med* 46:1658-1667, 2009

C. Research grants:

Active:

NIH R01 ES014471

12/01/2006-11/30/2010

Principal investigator (Guo)

\$237,600/year

Effect of antioxidant enzymes on BaP-induced atherogenesis.

The major goal of this project is to investigate if oxidative stress is a mechanism for BaP- induced atherosclerosis.

NIH R01 HL089382

08/01/2009-07/31/2011

Principal investigator (Guo)

\$305,872/year

Endoplasmic reticulum stress and foam cell formation

The major goal of this project is to investigate if endoplasmic reticulum stress is a mechanism of foam cell formation.

Completed:

AHA 0030239N (Guo) 01/01/2000-12/31/2003

The National Center of American Heart Association

Involvement of genomic instability in atherosclerosis: testing the somatic mutation theory of atherosclerosis using transgenic mice.

The major goal of this project is to study the role of DNA damage and/or mutation in atherosclerosis.

AFAR research award (Guo) 07/01/2002-06/30/2003

American Federation for Aging Research

Effect of calorie restriction on atherosclerosis.

The major goal of this project is to investigate if calorie restriction retards atherogenesis in mouse models.

NIH R15 HL071525 Guo) 09/01/2003-08/31/05

The role of reactive oxygen species in atherogenesis

The major goal of this project is to study if reduction in reactive oxygen species retards atherogenesis.

NIH F31 GM064087 08/01/2004-07/31/2006

Trainee: Wendy Brisbon

Mentor: Guo

The effect of reactive oxygen species on endothelial death.

The major goal of this study is to assess the role of ROS in oxidized lipid-induced endothelial death.

NIH S06 GM08037-32 (PI: Hubert Rucker) 08/01/2003-07/31/2007

Project director (Guo)

The role of oxidative stress in atherogenesis.

The major goal of this project is to study if oxidative stress contributes to the pathogenesis of atherosclerosis in mouse models.

NIH P20 RR011792-06 (PI: Valerie Montgomery-Rice) 08/01/2003-07/31/2008

Project director (Guo)

Hypertension, oxidative stress and races.

The major goal of this project is to study the relationship between oxidative stress and hypertension in African-Americans.

NIH F31 HL083921-01 04/01/2006-09/30/2008

Trainee: Ogbeyalu E.K Onuma

Mentor (Guo)

The effect of hydrogen peroxide on cell cycle of endothelia cells