

BIOGRAPHICAL SKETCH

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NAME Robert Shenkar, Ph.D.		POSITION TITLE Research Assistant Professor of Neurological Surgery	
eRA COMMONS USER NAME RSHENKAR			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Michigan, Ann Arbor, MI	B.S.	1971-1974	Biophysics
Michigan State University, East Lansing, MI	Ph.D.	1974-1979	Biophysics
The University of California, Davis, CA	Postdoctoral	1979-1982	Genetics
The University of Chicago, Chicago, IL	Postdoctoral	1982-1983	Microbiology
The Rockefeller University, New York, NY	Postdoctoral	1984-1986	Dermatology
Univ. of Southern California, Los Angeles, CA	Postdoctoral	1987-1992	Molecular Biology
The University of California, Los Angeles, CA	Postdoctoral	1992-1993	Pulmonary Science
Univ. of Colorado Health Sci. Cntr, Denver, CO	Postdoctoral	1993-1995	Pulmonary Science

A. Positions and Honors

Positions and Employment

1995-2001 Instructor of Medicine, Pulmonary Science, University of Colorado Health Sci Center, Denver, CO
2001 Sr Prof Research Asst, Cellular & Structural Biology, Univ of Colorado Health Sci Ctr, Denver, CO
2001-2003 Sr Prof Research Assoc/Instructor, Neurosurgery, Univ of Colorado Health Sci Ctr, Denver, CO
2003-2007 Research Associate III, Evanston Northwestern Healthcare Research Institute, Evanston, IL
2004-2007 Research Assistant Professor of Neurological Surgery, Northwestern University, Chicago, IL

Other Experience and Professional Memberships

1989 Reviewer, *Mechanisms of Ageing and Development*.
2000 Reviewer, *Brain, Behavior, and Immunity*.
2001-2005 Reviewer, American Institute of Biological Sciences
2003-2005 Member, Technologies for Metabolic Monitoring Peer Review Panel
1980-2007 Member, American Association for the Advancement of Science
1999-2007 Member, American Physiological Society

Honors

1974 Bachelor of Science with Distinction, The University of Michigan

B. Selected peer-reviewed publications (in chronological order)

(Publications selected from 40 peer-reviewed publications)

1. Larson K, Sahm J, **Shenkar R**, Strauss B. Methylation-induced blocks to in vitro DNA replication. *Mutat Res* 1985; 150:77-84.
2. Strauss BS, Larson K, Sagher D, Rabkin S, **Shenkar R**, Sahm J. In vitro models of mutagenesis. *Carcinog Compr Surv* 1985; 10:481-493.
3. Strauss B, Larson K, Rabkin S, Sagher D, Sahm J, **Shenkar R**. In vitro models for mutagenesis: a role for lesion, polymerase and sequence. *Prog Clin Biol Res* 1986; 209A:149-159.
4. Banga SS, **Shenkar R**, Boyd JB. Hypersensitivity of *Drosophila* mei-41 mutants to hydroxyurea is associated with reduced mitotic chromosome stability. *Mutat Res* 1986; 163:157-165.
5. **Shenkar R**, Shen M, Arnheim N. DNase I-hypersensitive sites and transcription factor binding motifs within the mouse E β meiotic recombination hot spot. *Mol Cell Biol* 1991; 11:1813-1819.

6. **Shenkar R**, Abraham E. Effects of hemorrhage on cytokine gene transcription. *Lymphokine Cytokine Res* 1993; 12:237-247.
 7. Ling X, **Shenkar R**, Sakai D, Arnheim N. The mouse Eb meiotic recombination hotspot contains a tissue-specific transcriptional enhancer. *Immunogenetics* 1993; 37:331-336.
 8. **Shenkar R**, Coulson WF, Abraham E. Hemorrhage and resuscitation induce alterations in cytokine expression and the development of acute lung injury. *Am J Respir Cell Mol Biol* 1994; 10:290-297.
 9. **Shenkar R**, Coulson WF, Abraham E. Anti-transforming growth factor-beta monoclonal antibodies prevent lung injury in hemorrhaged mice. *Am J Respir Cell Mol Biol* 11(3):351-357, 1994
 10. **Shenkar R**, Chang YH, Abraham E. Cytokine expression in Peyer's patches following hemorrhage and resuscitation. *Shock* 1994; 1:25-30.
 11. **Shenkar R**, Cohen AJ, Vestweber D, Miller YE, Tuder R, Abraham E. Hemorrhage and resuscitation alter the expression of ICAM-1 and P-selectin in mice. *J Inflamm* 1995; 45:248-259.
 12. **Shenkar R**, Abraham E. Effects of treatment with the 21-aminosteroid, U7438F, on pulmonary cytokine expression following hemorrhage and resuscitation. *Crit Care Med* 1995; 23:132-139.
 13. Abraham E, Bursten S, **Shenkar R**, Allbee J, Tuder R, Woodson P, Guidot DM, Rice G, Singer JW, Repine JE. Phosphatidic acid signaling mediates lung cytokine expression and lung inflammatory injury after hemorrhage in mice. *J Exp Med* 1995; 181:569-575.
 14. **Shenkar R**, Schwartz MD, Terada LS, Repine JE, McCord J, Abraham E. Hemorrhage activates NF- κ B in murine lung mononuclear cells in vivo. *Am J Physiol* 1996; 270:L729-L735.
 15. **Shenkar R**, Abraham E. Plasma from hemorrhaged mice activates CREB and increases cytokine expression in lung mononuclear cells through a xanthine oxidase-dependent mechanism. *Am J Respir Cell Mol Biol* 1996; 14:198-206.
 16. **Shenkar R**, Navidi W, Tavaré S, Dang MH, Chomyn A, Attardi G, Cortopassi G, Arnheim N. The mutation rate of the human mtDNA deletion mtDNA⁴⁹⁷⁷. *Am J Hum Genet* 1996; 59:772-780.
 17. **Shenkar R**, Abraham E. Hemorrhage induces rapid in vivo activation of CREB and NF- κ B in murine intraparenchymal lung mononuclear cells. *Am J Respir Cell Mol Biol* 1997; 16:145-152.
 18. Le Tulzo Y, **Shenkar R**, Kaneko D, Moine P, Fantuzzi G, Dinarello CA, Abraham E. Hemorrhage increases cytokine expression in lung mononuclear cells in mice: Involvement of catecholamines in nuclear factor- κ B regulation and cytokine expression. *J Clin Invest* 1997; 99:1516-1524.
 19. Moine P, **Shenkar R**, Kaneko D, Le Tulzo Y, Abraham E. Systemic blood loss affects NF- κ B regulatory mechanisms in the lungs. *Am J Physiol* 1997; 273:L185-L192.
 20. Meldrum DR, **Shenkar R**, Sheridan BC, Cain BS, Abraham E, Harkin AH. Hemorrhage activates myocardial NF κ B and increases TNF- α in the heart. *J Mol Cell Cardiol* 1997; 29:2849-2854.
 21. Shapiro L, Puren AJ, Barton HA, Novick D, Peskind RL, **Shenkar R**, Gu Y, Su MS, Dinarello CA. Interleukin 18 stimulates HIV type 1 in monocytic cells. *Proc Natl Acad Sci USA* 1998; 95:12550-12555.
 22. **Shenkar R**, Abraham E. Mechanisms of lung neutrophil activation after hemorrhage or endotoxemia: roles of reactive oxygen intermediates, NF-kappa B, and cyclic AMP response element binding protein. *J Immunol* 1999; 163:954-962.
 23. Parsey MV, Kaneko D, **Shenkar R**, Abraham E. Neutrophil apoptosis in the lung after hemorrhage or endotoxemia: apoptosis and migration are independent of IL-1 β . *Clin Immunol* 1999; 91:219-225.
 24. Abraham E, Kaneko DJ, **Shenkar R**. Effects of endogenous and exogenous catecholamines on LPS-induced neutrophil trafficking and activation. *Am J Physiol* 1999; 276: L1-L8.
 25. Abraham E, Carmody A, **Shenkar R**, Arcaroli J. Neutrophils as early immunologic effectors in hemorrhage- or endotoxemia-induced acute lung injury. *Am J Physiol Lung Cell Mol Physiol* 2000; 279:L1137-L1145.
 26. Donnahoo KK, Meldrum DR, **Shenkar R**, Chung CS, Abraham E, Harken AH. Early renal ischemia, with or without reperfusion, activates NFkappaB and increases TNF-alpha bioactivity in the kidney. *J Urol* 2000; 163:1328-1332.
 27. Moine P, McIntyre R, Schwartz MD, Kaneko D, **Shenkar R**, LeTulzo Y, Moore EE, Abraham E. NF-kappaB regulatory mechanisms in alveolar macrophages from patients with acute respiratory distress syndrome. *Shock* 2000; 13:85-91.
 28. Abraham E, Arcaroli J, **Shenkar R**. Activation of extracellular signal-regulated kinases, NF-kappa B, and cyclic adenosine 5'-monophosphate response element-binding protein in lung neutrophils occurs by differing mechanisms after hemorrhage or endotoxemia. *J Immunol* 2001; 166:522-530.
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29. **Shenkar R**, Yum HK, Arcaroli J , Kupfner J, Abraham E. Interactions between CBP, NF- κ B, and CREB in the lungs after hemorrhage and endotoxemia. *Am J Physiol Lung Cell Mol Physiol* 2001; 281:L418-426.
30. Yum HK, Arcaroli J, Kupfner J, **Shenkar R**, Penninger JM, Sasaki T, Yang KY, Park JS, Abraham E. Involvement of phosphoinositide 3-kinases in neutrophil activation and the development of acute lung injury. *J Immunol* 2001; 167:6601-6608.
31. **Shenkar R**, Elliott JP, Diener K, Gault J, Hu LJ, Cohrs RJ, Phang T, Hunter L, Breeze RE, Awad IA. Differential gene expression in human cerebrovascular malformations. *Neurosurgery* 2003; 52:465-478.
32. Meldrum DR, Patrick DA, Cleveland JC, **Shenkar R**, Meldrum KK, Raiesdana A, Ayala A, Brown JW, Harken AH. On-pump coronary bypass surgery activates human myocardial NF-kappaB and increases TNF-alpha in the heart. *J Surg Res* 2003; 112:175-179.
33. Gault J, Sarin H, Awadallah NA, **Shenkar R**, Awad IA. Pathobiology of human cerebral vascular malformations: basic mechanisms and clinical relevance. *Neurosurgery* 2004; 55:1-17.
34. Gault J, **Shenkar R**, Resnick P, Awad IA. Biallelic somatic and germ line CCM1 truncating mutations. *Stroke* 2005; 36:872-874.
35. **Shenkar R**, Sarin H, Awadallah NA, Gault J, Kleinschmidt-DeMasters BK, Awad IA. Variations in structural protein expression and endothelial cell proliferation in relation to clinical manifestations of cerebral cavernous malformations. *Neurosurgery* 2005; 56:343-354.
36. Mindea SA, Yang BP, **Shenkar R**, Bendok B, Batjer HH, Awad IA. Cerebral cavernous malformations: clinical insights from genetic studies. *Neurosurg Focus* 2006; 21:E1, 1-7.

C. Research Support

Ongoing Research Support

1 R21 NS052285-01A2 Awad (PI) 01/01/07- 12/31/08
NIH/NINDS

Immune Response in Human Cerebral Cavernous Malformations

The major goal of this project is to establish the presence of immune cells and immunoglobulin oligoclonality within human cerebral cavernous malformations.

Role: Investigator

Completed Research Support

Butcher Award Awad (PI) 07/01/03 – 6/30/04
University of Colorado

A Statistical Analysis of Differential Gene Expression in Cerebral Vascular Malformations

The major goal of this project is to development innovative statistical approaches to analyze microarrays.

Role: Co-Investigator

ENH Pilot Grant Program Awad (PI) 04/01/05- 03/31/06
Advanced Imaging in Cerebral Cavernous Malformations

Intramural support for pilot studies on advanced imaging in human cerebral vascular malformations, including preliminary data for the imaging of inflammatory cells in cavernous malformations, imaging of lesions in transgenic mice, and high field imaging of vascular malformations in patients.

Role: Co-Investigator