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## BIOGRAPHICAL SKETCH

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NAME

Katovich, Michael J

POSITION TITLE

Professor

eRA COMMONS USER NAME (credential, e.g., agency login)

katovich

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)

INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
University of California at Davis	B.Sc.	1970	Zoology
University of California at Davis	M.Sc.	1973	Animal Physiology
University of California at Davis	Ph.D.	1976	Animal Physiology
University of Florida	postdoctoral	1976-79	Physiology

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### A. Positions and Honors

1977-1979– American Heart Fellow, College of Medicine, University of Florida  
1979-1984 – Assistant Professor, Department of Pharmaceutical Biology, College of Pharmacy, U of Florida  
1984-1989 – Associate Professor, Department of Pharmaceutical Biology, College of Pharmacy, U of Florida  
1988-1993 – Chairman, Department of Pharmacodynamics, College of Pharmacy, University of Florida  
1989- present- Professor, Department of Pharmacodynamics, College of Pharmacy, University of Florida

### Honors

1992 Research Achievement Award (top 100 researchers at UF (for FY 1991-92)  
1996 Recipient of Teaching Incentive Program (TIP) Award at UF  
1998 NRC Task Group on Institutional Arrangements for Space Station Research  
1998 President of UF Society of Sigma Xi  
1999 President, International Society of Gravitational Physiology,  
1999-2000 Task Group on Institutional Arrangements for Facilitating Research on the International Space Station (IASSR) - appointment through the Space Policy Board of the NRC  
2001 Recipient of Professorial STEP award at UF  
2004 Chair of OBPR Life Sciences Advisory Sub-committee to Design a Path for Rodent Habitat for the International Space Station  
2005 Merck/AAAS Visiting Scientist at Hope College  
2011 Recipient of Professorial STEP award at UF

### Other Experience and Professional Memberships (for past 10 years)

1974- 2006 Member of Sigma Xi  
1979- present Member of American Physiological Society  
1983- present Member of the Endocrine Society  
1989- present Member of American Diabetes Association  
1994- 2004 Member of the Life and Microgravity Sciences and Applications Advisory Subcommittee (NASA)  
1995- 2002 Member of the Science Working Group for the Space Station Biological Research Project (NASA)  
1995-1998 - Research Peer Review Committee for the AHA, Southeastern American Heart Consortium  
2003-2004 Research Peer Review Committee for the AHA, Southeastern Consortium  
1996- present Member of American Society of Hypertension  
1996- present Member of the International Society of Gravitational Physiology  
1998- 2001 Member of the Hyper Gravity Project (at NASA AMES)  
2001 Review Team for the National Space Biomedical Research Institute

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2002	Site Review team for NASA Ames Research Center
2003-2005	Member of the Investigator Working Group (IWG) for the Space Station Biological Research Project at NASA AMES
2011	Member of the 5 year institute review team for the National Space Biomedical Research Institute

## B. Selected Peer-reviewed Publications

Manuscripts from last 5 years (Publications selected from 177 peer-reviewed publications)

1. Yamazato Y, Ferreira AJ, Hong KH, Sriramula S, Francis J, Yamazato M, Yuan L, Bradford CN, Shenoy V, Oh SP, **Katovich MJ**, Raizada MK. Prevention of pulmonary hypertension by Angiotensin-converting enzyme 2 gene transfer. *Hypertension* 2009; 54:365-71. (PMID: 19564552)
2. Mecca AP, O'Connor TE, **Katovich MJ**, and Sumners C. Candesartan pre-treatment is cerebroprotective in a rat model of endothelin-1 induced middle cerebral artery occlusion. *Exp Physiol*. Exp Physiol. 2009 Aug;94(8):937-46. Epub 2009 May 8. (PMID: 19429641)
3. Shenoy V, Grobe JL, Qi Y, Ferreira AJ, Fraga-Silva RA, Collamat G, Bruce E, **Katovich MJ**. 17beta-Estradiol modulates local cardiac renin-angiotensin system to prevent cardiac remodeling in the DOCA-salt model of hypertension in rats. *Peptides*. 2009 Dec;30(12):2309-15. Epub 2009 Sep 9. (PMID: 19747516)
4. Ferreira AJ, Shenoy V, Yamazato Y, Sriramula S, Francis J, Yuan L, Castellano RK, Ostrov DA, Oh SP, **Katovich MJ**, Raizada MK. Evidence for angiotensin-converting enzyme 2 as a therapeutic target for the prevention of pulmonary hypertension. *Am. J Respir Crit Care Med* 2009; 179:1048-54. Epub 2009 Feb 26. (PMID: 19246717)
5. Yamazato Y, Ferreira AJ, Hong KH, Sriramula S, Francis J, Yamazato M, Yuan L, Bradford CN, Shenoy V, Oh SP, **Katovich MJ**, Raizada MK. Prevention of pulmonary hypertension by Angiotensin-converting enzyme 2 gene transfer. *Hypertension* 2009; 54:365-71. (PMID: 19564552)
6. Qi Y, Liu X, Li H, Shenoy V, Li Q, Hauswirth WW, Sumners C, **Katovich MJ**. Selective tropism of the rAAV9 serotype for rat cardiac tissue. *J Gene Med*. 2010 Jan;12(1):22-34. (PMID: 19830780).
7. Ferreira A, Santos RA, Bradford CN, Mecca A, Sumners C, **Katovich MJ**, Raizada MK. Therapeutic implications of the vasoprotective axis of the Renin-Angiotensin System in cardiovascular diseases. *Hypertension*. 2010 Feb;55(2):207-13. Epub 2009 Dec 28.
8. Li H, Qi Y, Li C, Braseth LN, Gao Y, Shabashvili AE, **Katovich MJ**, Sumners C.. Angiotensin Type 2 Receptor Mediated Apoptosis of Human Prostate Cancer. *Mol Cancer Ther*. 2009 Dec;8(12):3255-65. Epub
9. Boules M, Liang Y, Briody S, Miura T, Fauq I, Oliveros A, Wilson M, Khaniyev S, Williams K, Li Z, Qi Y, **Katovich M**, Richelson E. NT79: A novel neurotensin analog with selective behavioral effects. *Brain Res*. 2010 Jan 13;1308:35-46. Epub 2009 Oct 27
10. Fraga-Silva RA, Sorg BS, Wankhede M, DeDeugd C, Jun JY, Baker MB, Li Y, Castellano RK, **Katovich MJ**, Raizada MK, Ferreira A. ACE2 activation promotes anti-thrombotic activity. *Mol Med*. 2010 Jan 29. [Epub ahead of print]
11. Shan Z, Shi P, Cuadra AE, Dong Y, Lamount GJ, Li Q, Seth DM, Navar LG, **Katovich MJ**, Sumners C, Raizada MK Involvement of the brain (pro)renin receptor in cardiovascular homeostasis. *Circ Res*. 2010 Oct 1;107(7):934-8. Epub 2010 Aug 5
12. Shi P, Diez-Freire C, Jun JY, Qi Y, **Katovich MJ**, Li Q, Sriramula S, Francis J, Sumners C, Raizada MK. Brain microglial cytokines in neurogenic hypertension. *Hypertension*. 2010 Aug;56(2):297-303. Epub 2010 Jun 14.
13. Shenoy V, Ferreira AJ, Qi Y, Fraga-Silva RA, Díez-Freire C, Dooies A, Jun JY, Sriramula S, Mariappan N, Pourang D, Venugopal CS, Francis J, Reudelhuber T, Santos RA, Patel JM, Raizada MK, **Katovich MJ**. The angiotensin-converting enzyme 2/angiogenesis-(1-7)/Mas axis confers cardiopulmonary protection against lung fibrosis and pulmonary hypertension. *Am J Respir Crit Care Med*. 182(8):1065-72. 2010. PMID: 20581171

14. Ferreira AJ, Shenoy V, Qi Y, Fraga-Silva RA, Santos RA, **Katovich MJ**, Raizada MK. Angiotensin-converting enzyme 2 activation protects against hypertension-induced cardiac fibrosis involving extracellular signal-regulated kinases. *Exp Physiol*. 96(3):287-94, 2011. PMID: 21148624.
15. Shenoy V, Qi Y, **Katovich MJ**, Raizada MK. ACE2, a promising therapeutic target for pulmonary hypertension. *Curr Opin Pharmacol*. 11(2):150-5, 2011. PMID: 21215698
16. Qi Y, Shenoy V, Wong F, Li H, Afzal A, Mocco J, Sumners C, Raizada MK, **Katovich MJ**. Lentiviral mediated overexpression of angiotensin-(1-7) attenuated ischemic-induced cardiac pathophysiology. *Exp Physiol* 96(9):863-74, 2011. PMID: 21685447
17. Mecca A, Regenhardt RW, O'Connor TE, Joseph JP, Raizada MK, **Katovich MJ**, Sumners C. Cerebroprotection by angiotensin-(1-7) in endothelin-1 induced ischemic stroke. *Exp Physiol* June 17, 2011. PMID: 21685445
18. Qi Y, Li H, Shenoy V, Li Q, Wang F, Raizada M, Sumners C, **Katovich M**. Moderate cardiac-selective overexpression of angiotensin type 2 receptor protects cardiac functions from ischemic injury. *Exp Physiol*. 2011 Oct 3. [Epub ahead of print] PMID: 21967903.
19. Murça TM, Moraes PL, Capuruço CA, Santos SH, Melo MB, Santos RA, Shenoy V, **Katovich MJ**, Raizada MK, Ferreira AJ. Oral Administration of an Angiotensin-Converting Enzyme 2 Activator Ameliorates Diabetes-Induced Cardiac Dysfunction. *Regul Pept*. 177(1-3):107-15, 2012. PMID: 22595130
20. Qi Y, Li Q, Shenoy V, Zingler M, Jun J, Verma A, **Katovich MJ**, Raizada MK. Comparison of Transduction Efficiency of Tyrosine-Mutant AAV Serotype Vectors in Kidney. *Clin Exp Pharmacol Physiol*. 40 (1):53-55, 2012. PMID: 23216315
21. Shenoy V, Gjymishka A, Yagna J, Qi Y, Afzal A, Rigatto K, Ferreira AJ, Fraga-Silva RA, Kearns P, Yellowlees Douglas J, Agarwal D, Mubarak KK, Bradford C, Kennedy WR, Jun JY, Rathinasabapathy A, Bruce E, Gupta D, Cardounel AJ, Mocco J, Patel JM, Francis J, Grant MB, **Katovich MJ**, Raizada MK. Diminazene Attenuates Pulmonary Hypertension and Improves Angiogenic Progenitor Cell Functions in Experimental Models. *Am J Respir Crit Care Med*. 1187(6):648-57, 2013. PMID: 23370913
22. Shan Z, Zubcevic J, Shi P, Jun JY, Dong Y, Murça TM, Lamont GJ, Cuadra A, Yuan W, Qi Y, Li Q, Paton JF, **Katovich MJ**, Sumners C, Raizada MK. Chronic Knockdown of the Nucleus of the Solitary Tract AT1 Receptors Increases Blood Inflammatory-Endothelial Progenitor Cell Ratio and Exacerbates Hypertension in the Spontaneously Hypertensive Rat. *Hypertension*. 2013 Apr 1. [Epub ahead of print] PMID: 23547238.
23. Fraga-Silva RA, Costa-Fraga FP, Murça TM, Moraes PL, Lima AM, Lautner RQ, Castro CH, Soares CM, Borges CL, Nadu AP, Oliveira ML, Shenoy V, **Katovich MJ**, Santos RA, Raizada MK, Ferreira AJ. Angiotensin-Converting Enzyme 2 Activation Improves Endothelial Function. *Hypertension*. 2013 Apr 22. [Epub ahead of print] PMID: 23608648
24. Rigatto K, Casali KR, Shenoy V, **Katovich MJ**, Raizada MK. Diminazene aceturate improves autonomic modulation in pulmonary hypertension. *Eur J Pharmacol*. 713(1-3):89-93, 2013. Epub 2013 May 9. PMID: 23665493 [PubMed - in process]
25. Qi Y, Zhang J, Cole-Jeffrey CT, Shenoy V, Espejo A, Hanna M, Song C, Pepine CJ, **Katovich MJ**, Raizada MK. Diminazene aceturate enhances Angiotensin-converting enzyme 2 activity and attenuates ischemia-induced cardiac pathophysiology. *Hypertens* 62(4):746-52, 2013 Epub 2013 Aug 19. PMID: 23959549 [PubMed - in process]
26. Joseph JP, Mecca AP, Regenhardt RW, Bennion DM, Rodríguez V, Desland F, Patel NA, Pioquinto DJ, Unger T, **Katovich MJ**, Steckelings UM, Sumners C. The angiotensin type 2 receptor agonist Compound 21 elicits cerebroprotection in endothelin-1 induced ischemic stroke. *Neuropharmacology*. 2014 Feb 6. pii: S0028-3908(14)00051-3. doi: 10.1016/j.neuropharm.2014.01.044. [Epub ahead of print] PMID:24508710
27. Qi F, **Katovich MK**. Is angiotensin II type 2 receptor a new therapeutic target for cardiovascular disease. *Exp Physiol* 99:933-934, 2014.
28. Hilzendegeer AM, Shenoy V, Raizada MK, **Katovich MJ**. Neuroinflammation in Pulmonary Hypertension: Concept, Facts, and Relevance. *Curr Hypertens Rep*. 2014 Sep;16(9):469. PMID: 25090964 [PubMed - in process] NIHMS618968.
29. Shenoy V, Kwon KC, Rathinasabapathy A, Lin S, Jin G, Song C, Shil P, Nair A, Qi Y, Li Q, Francis J, **Katovich MJ**, Daniell H, Raizada MK. Oral Delivery of Angiotensin-Converting Enzyme 2 and Angiotensin-(1-7) Bioencapsulated in Plant Cells Attenuates Pulmonary Hypertension. *Hypertension*. 2014 Sep 15. [Epub ahead of print]. PMID:25225206

## C. Research Support

### Ongoing Research Support

#### ACTIVE

**NIH – 2R01HL056921-15** ( Raizada and Katovich , Co-PIs)

3/01/2011-2/28/2016

Effort, 3.0 calendar months

NIH/NHLBI

“CVD protection mechanisms involving ACE2/Ang-(1-7) axis”

The overall objective of this proposal is to investigate if increased levels of cardiac ACE2 or its product, Ang-(1-7), would increase coronary neovascularization, decrease cardiac remodeling and improve cardiac function, to ameliorate and reverse HD. This will be accomplished by using activators of the ACE2/Ang-(1-7) axis, and genetically modified BMPCs and to transition this into the clinical arena.

**NIH – HL102033** (Raizada and Katovich, Co-PIs)

6/10-5/15

Effort, 1.8 Cal months.

NIH/NHLBI

“ACE2 in vascular endothelial function”

The overall objective of this application is to investigate the role of ACE2 in pulmonary hypertension therapeutics.

#### RECENT:

**Michael Katovich** (PI)

**American Heart Association, Southeast Affiliate (PI)**

(0855924E)

“Cardioprotective effects of AT2 receptor overexpression”

07/01/08-06/30/11

Effort, 1.2 calendar months

Overall objective is to overexpress AT2R using an AAV viral-mediated delivery in cardiac tissue to investigate if this overexpression will be cardioprotective and result in a decrease in interstitial fibrosis and hypertrophy following an MI in rats.

**RC1 HL099980** (Raizada and Grant, Co-PIs)

9/30/09-8/31/12

Effort, 1.8 Cal months

NIH/NHLBI

“ACE2 as a target for pulmonary hypertension therapeutics”

The overall goal of this application is to use genetically modified stem cells to investigate their potential got the treatment of pulmonary hypertension.

Role Co-Investigator