# Curriculum Vitae

**Yunbo Ke, PhD**

Assistant Professor

Department of Anesthesiology

University of Maryland School of Medicine

**Date:** 12/23/2016

**Contact information**

Address: 20 Penn Street

Baltimore, MD 21201

Phone: 410.706.2572

Fax: 410.328.5531

Cellular phone: 312 217 3879

E-mail: yke@anes.umm.edu

Foreign languages:Chinese (native)

**Education**

1978-1982Huazhong Normal University, Hubei, P. R. China

BS degree in Biology

1990-1995 The Ohio State University

Ph.D. Biochemistry

Thesis title: Regulation by introns: Splicing signals are required for growth-stimulated expression of thymidylate synthase in mouse fibroblasts. Advisor: Lee F Johnson, professor and chairman

## Post Graduate Education and Training

1995-1998 Cardiology Section, University of Chicago

Postdoctoral fellow and research associate

Studying gene therapy of Duchenne muscular dystrophy

1998-2003 Department of Physiology and Biophysics, University of Illinois at Chicago

Research associate

Studying signal transduction in vascular models

## Employment History

**Academic Appointments**

2003-2015 Department of Physiology and Biophysics, University of Illinois at Chicago

Research assistant professor

Studying signal transduction in the heart and teaching courses in molecular biology and physiology

Aug. 2015 to Dec 2016 Department of Medicine, Section of Pulmonary and Critical care, University of Chicago

Research professional

Studying signal transduction in vascular cells related to acute lung injury

Jan. 2017 to present Department of Anesthesiology, University of Maryland Medical School

Assistant professor

Signal transduction and vascular biology in the lungs, acute lung injury

## Professional Society Memberships

1994-1995 American society for Biochemistry and molecular biology

1996-1998 American society for microbiology

2002-2015 Biophysical Society

2016-present Experimental Biology Society

## Honors and Awards

2009 University of Illinois at Chicago, CCTS (Center for Clinical and Translational Studies) award

## Teaching Service

1. Research methods in physiology studies (1999): Recombinant adenovirus and the application in mammalian research models. Department of Physiology and Biophysics, UIC. This part of teaching consists of three hours of instruction plus two hours of experiments. There were 8 students in the class.
2. UIC summer class (2006) II. Electrical Activity of the Heart. This is part of a summer physiology course to students from dental school. Two hour class instruction plus Q & A workshop. There were 45 students.
3. PhyB 58 (2009) Regulation of cardiac function by reversible protein phosphorylation and phosphatase signaling, UIC (Faculty evaluation by students: score at 4.60 over a total score of 5) This is an advanced course for graduate students. Three hour class instruction plus student presentation on related topics. There were 8 students in the class.

**Patents, Inventions and Copyrights**

[PAK1 agonists and methods of use](http://patents.justia.com/patent/8513308)

**Patent number:** 8513308

**Inventors:** Yunbo Ke, Ross John Solaro

**Reviewer for the following journals**

American Journal of Physiology-Cell Physiology; American Journal of Physiology—Endocrinology and Metabolism; American Journal of Physiology-Heart and circulatory Physiology; American Journal of Respiratory Cell and Molecular Biology*,* Archives of Biochemistry and Biophysics; British Journal of Pharmacology; Journal of Biological Chemistry; Journal of Molecular and Cellular Cardiology; Nature-communication; Experimental Physiology; Journal of Cell Science

**Current Grant Support:**

NIH/NHLBI R01 HL076259

06/01/04-03/31/18

Control of Lung Permeability by Oxidized Phospholipids

Annual Direct Costs: $250,000

Total Direct Costs: $1,000,000

PI: K. Birukov

Role: Co-Investigator

Effort: 30%

NIH/NHLBI RO1 HL107920

04/01/2016- 03/31/2020

“Microtubule-associated regulation in control of endothelial permeability”

Annual Direct Costs: $250,000

Total Direct Costs: $1,000,000

PI: A. Birukova

Role: Research Associate

Effort: 40%

NIH/NHLBI RO1 HL130431

07/01/16- 06/31/20

“Differential mechano-signaling in vascular endothelium by varying degrees of mechanical stretch”

Annual Direct Costs: $250,000

Total Direct Costs: $1,000,000

PI: A. Birukova

Role: Research Associate

Effort: 30%

**Publications**

**Peer-reviewed journal articles**

1. John Ash, **Yunbo Ke**, and Lee F. Johnson. Introns are essential for growth-regulated expression of the mouse thymidylate synthase gene. (1993) Mol. Cell. Biol.13:1565-1571. (Yunbo Ke and John Ash made an equal contribution to this paper).
2. Martin Korb, **Yunbo Ke** and Lee F. Johnson. Stimulation of gene expression by introns: conversion of an inhibitory intron to a stimulatory intron by alternation of the splice donor sequence. (1993) Nucleic Acid Res. 21:5901-5908.
3. John Ash, Wen-Chich Liao, **Yunbo Ke** and Lee F. Johnson. Regulation of mouse thymidylate synthase gene expression in growth-stimulated cells: Upstream S phase control elements are indistinguishable from the essential promoter elements. (1995) Nucleic Acid Res. 23:4649-4656
4. **Yunbo Ke**, John Ash and Lee F. Johnson. Splicing signals are required for S phase regulation of the mouse thymidylate synthase gene. (1996) Mol. Cell. Biol. 16:376-383
5. Lidija Pestic-Dragovich, Anatoly Philimonenko, Gregorz Nowak, **Yunbo Ke**, Robert E. Settlage, Jeffrey Shabanowitz, donald F. Hunt, Pavel Hozak and Primal de Lanerolle Myosin I in the nucleus, (2000) Science 290(337-341)
6. Solaro RJ, Montgomery DE, Wang Lynn, Burkart EM, **Ke Y**, Vahebi S, Buttrick P. (2002) Integration of pathways that signal cardiac growth with modulation of myofilament activity. J Nuc Cardiol 9:523-533.
7. **Ke, Y.** Wang, L. Pyle, W. G. De Tombe, P. P. Solaro, R. J. Intracellular Localization and Functional Effects of P21-Activated Kinase-1 (Pak1) in Cardiac Myocytes, (2004) Circ Res. (2004 Feb 6) 94:194-200. PMID: 14670848
8. Fernando A.L. Dias, Lori A. Walker, Grace M. Arteaga, John S. Walker, Kalpana, Vijayan, James R. Pena, **Yunbo Ke**, Rosalvo T.H. Fogaca, Atsushi Sanbe, Jeffrey Robbins, Beata M. Wolska. The effect of myosin regulatory light chain phosphorylation on the frequency-dependent regulation of cardiac function. Journal of Molecular and Cellular Cardiology 41 (2006) 330-339. PMID: 16806259
9. **Ke Y**, Lum H, Solaro RJ. Inhibition of endothelial barrier dysfunction by P21-activated kinase-1. Can J Physiol Pharmacol. 2007 Mar-Apr;85(3-4):281-8. PMID: 17612635 **(Yunbo Ke, Corresponding author)**.
10. **Yunbo Ke**[, Lei M, Collins TP, Rakovic S, Mattick PA, Yamasaki M, Brodie MS, Terrar DA, Solaro RJ.](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=17413045&ordinalpos=2&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVDocSum) Regulation of L-type calcium channel and delayed rectifier potassium channel activity by p21-activated kinase-1 in guinea pig sinoatrial node pacemaker cells. Circ Res. 2007 May 11;100(9):1317-27. Epub 2007 Apr 5. PMID: 17413045
11. Lei M, **Yunbo Ke**, Solaro RJ, Pak1: steps towards understanding the regulatory mechanisms of pacemaker function of the heart. Future Cardiology, Sept. (2007) 3(5), 473-476. Invited article (Editorial). PMID: 19804297 (Yunbo Ke, corresponding author).
12. [Sheehan KA, **Yunbo Ke**, Solaro RJ.](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=17609315&ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVDocSum) P21 Activated Kinase-1 and its Role in Integrated Regulation of Cardiac Contractility. Am J Physiol Regul Integr Comp Physiol. 2007 Sep; 293(3):R963-73. PMID: 17609315
13. **Yunbo Ke** and Solaro RJ, Use of a decoy peptide to purify p21 activated kinase-1 in cardiac muscle and identification of ceramide related activation, Biologics: Target and Therapy. 2008, 2(4), 903-909. PMC2727905 (Yunbo Ke, corresponding author)
14. **Yunbo Ke**,Lei M. and Solaro RJ,Regulation of Cardiac Excitation-contraction Coupling by p21 activated kinase-1. Prog Biophys Mol Biol. 2008 Oct-Nov;98(2-3):238-50. PMID: 19351515 PMC270976
15. Sheehan, K. A., **Ke, Y.**, Wolska, B. M. and Solaro, R. J. (2009) Expression of active p21-activated kinase-1 induces Ca2+ flux modification with altered regulatory protein phosphorylation in cardiac myocytes. *Am J* Physiol Cell Physiol **296,** C47-58. PMID: 18923061 PMC2636994
16. Egom EE, **Ke Y**, Musa H, Mohamed TM, Wang T, Cartwright E, Solaro RJ, Lei M. FTY720 prevents ischemia/reperfusion injury-associated arrhythmias in an ex vivo rat heart model via activation of Pak1/Akt signaling. [J Mol Cell Cardiol.](javascript:AL_get(this,%20'jour',%20'J%20Mol%20Cell%20Cardiol.');) 2009 Oct 21.
17. Egom EE, **Ke Y**, Solaro RJ, Lei M. Unravelling mechanisms of cardioprotection in ischemia/reperfusion injury: Spotlight on sphingosine-1-phosphatete signaling. Prog Biophys Mol Biol. 2010 Jan 18. PMID: 20080123
18. **Yunbo Ke**, Katherine Sheehan, E. Eroume A Egom, Ming Lei and R. John Solaro. Novel bradykinin signaling in adult rat cardiac myocytes through activation of p21 activated kinase. Am J Physiol Heart Circ Physiol. 2010 Apr;298(4):H1283-9. Epub 2010 Feb 12.PMID: 20154261 PMC2853422
19. [Solaro RJ](http://www.ncbi.nlm.nih.gov/pubmed?term=%22Solaro%20RJ%22%5BAuthor%5D), [Sheehan KA](http://www.ncbi.nlm.nih.gov/pubmed?term=%22Sheehan%20KA%22%5BAuthor%5D), [Lei M](http://www.ncbi.nlm.nih.gov/pubmed?term=%22Lei%20M%22%5BAuthor%5D), [**Ke Y**](http://www.ncbi.nlm.nih.gov/pubmed?term=%22Ke%20Y%22%5BAuthor%5D). The curious role of sarcomeric proteins in control of diverse processes in cardiac myocytes. [J Gen Physiol.](javascript:AL_get(this,%20'jour',%20'J%20Gen%20Physiol.');) 2010 Jul;136(1):13-9. PMC2894547
20. Egom EE, Mohamed TM, Mamas MA, Shi Y, Liu W, Chirico D, Stringer S, **Ke Y**, Shaheen M, Wang T, Chacko S, Wang X, Solaro RJ, Fath-Ordoubadi F, Cartwright EJ, Lei M. [Activation of Pak1/Akt/eNOS signaling following sphingosine-1-phosphate release as part of a mechanism protecting cardiomyocytes against ischemic cell injury.](http://www.ncbi.nlm.nih.gov/pubmed/21705677) PMID: 21705677. Am J Physiol Heart Circ Physiol. 2011 Jul 8
21. Ai X, Jiang A, **Ke Y**, Solaro RJ, and Pogwizd SM. Enhanced activation of p21-activated kinase 1 in heart failure contributes to dephosphorylation of connexin 43. *Cardiovasc Res*. 2011 Jul 20. PMID: 21727092
22. Liu W, Zi M, Naumann R, Ulm S, Jin J, Taglieri DM, Prehar S, Gui J, Tsui H, Xiao RP, Neyses L, Solaro RJ, **Ke Y**, Cartwright EJ, Lei M, and Wang X. Pak1 as a novel therapeutic target for antihypertrophic treatment in the heart. PMID:22082674. Circulation. 2011 Dec 13;124(24):2702-15. **(Yunbo Ke, a senior author)**
23. Domenico M. Taglieri, Michelle M. Monasky, Ivana Knezevic,Katherine A. Sheehan, Ming Lei, Xin Wang, Jonathan Chernoff, Beata M. Wolska, **Yunbo Ke**, R. John Solaro. Ablation of p21-Activated Kinase-1 in Mice Promotes Isoproterenol-Induced Cardiac Hypertrophy in Association with Activation of Erk1/2 and Inhibition of Protein Phosphatase 2A.PMID: 21971074. J Mol Cell Cardiol. 2011 Sep 24
24. Monasky MM, Taglieri DM, Patel BG, Chernoff J, Wolska BM, **Ke Y**, and Solaro RJ. p21-activated kinase improves cardiac contractility during ischemia-reperfusion concomitant with changes in troponin-T and myosin light chain 2 phosphorylation. PMID: 22037191. Am J Physiol Heart Circ Physiol 2012 Jan, 302: H224-230.
25. **Ke Y**, Lei M, Wang X, and Solaro RJ. Novel roles of PAK1 in the heart. Cellular Logistics 2:2, 89-94; April/May/June 2012 Landes Bioscience
26. DeSantiago J, Bare DJ, **Ke Y**, Sheehan KA, Solaro RJ, Banach K.[Functional integrity of the T-tubular system in cardiomyocytes depends on p21-activated kinase 1.](http://www.ncbi.nlm.nih.gov/pubmed/23612118) J Mol Cell Cardiol. 2013 Jul;60:121-8. doi: 10.1016/j.yjmcc.2013.04.014. Epub 2013 Apr 20. PMID:23612118
27. Liu W, Zi M, Tsui H, Chowdhury SK, Zeef L, Meng QJ, Travis M, Prehar S, Berry A, Hanley NA, Neyses L, Xiao RP, Oceandy D, **Ke Y**, Solaro RJ, Cartwright EJ, Lei M, Wang X. [A Novel Immunomodulator, FTY-720 Reverses Existing Cardiac Hypertrophy and Fibrosis From Pressure Overload by Targeting NFAT (Nuclear Factor of Activated T-cells) Signaling and Periostin.](http://www.ncbi.nlm.nih.gov/pubmed/23753531) Circ Heart Fail. 2013 Jul 1;6(4):833-44. PMID:2375353
28. **Ke Y**, Lei M, Wang X, Solaro RJ. [Unique catalytic activities and scaffolding of p21 activated kinase-1 in cardiovascular signaling.](http://www.ncbi.nlm.nih.gov/pubmed/24098283) Front Pharmacol. 2013 Sep 27;4:116. Review. PMID:24098283 (**Yunbo Ke**, Corresponding author)
29. Desantiago J, Bare DJ, Xiao L, **Ke Y**, Solaro RJ, Banach K. [p21-Activated kinase1 (Pak1) is a negative regulator of NADPH-oxidase 2 in ventricular myocytes.](http://www.ncbi.nlm.nih.gov/pubmed/24380729) J Mol Cell Cardiol. 2014 Feb;67:77-85. doi: 10.1016/j.yjmcc.2013.12.017. Epub 2013 Dec 28.
30. Wang R, Wang Y, Lin WK, Zhang Y, Liu W, Huang K, Terrar DA, Solaro RJ, Wang X, **Ke Y**, Lei M. Inhibition of angiotensin II-induced cardiac hypertrophy and associated ventricular arrhythmias by a p21 activated kinase 1 bioactive peptide.PLoS One. 2014 Jul 11;9(7):e101974. 2014, PMID:25014109
31. Wang Y, Tsui H, **Ke Y**, Shi Y, Li Y, Davies L, Cartwright EJ, Venetucci L, Zhang H, Terrar DA, Huang CL, Solaro RJ, Wang X, Lei M. [Pak1 Is Required to Maintain Ventricular Ca2+ Homeostasis and Electrophysiological Stability through SERCA2a Regulation in Mice.](http://www.ncbi.nlm.nih.gov/pubmed/25217043) Circ Arrhythm Electrophysiol. 2014 Sep 12. pii: CIRC EP.113.001198. PMID:25217043
32. **Ke Y**, Wang X, Jin XY, Solaro RJ, Lei M. [PAK1 is a novel cardiac protective signaling molecule.](http://www.ncbi.nlm.nih.gov/pubmed/25416031) Front Med. 2014 Dec; 8(4):399-403. doi: 10.1007/s11684-014-0380-9. Epub 2014 Nov 22.PMID:25416031
33. Lei M, Wang X, **Ke Y**, Solaro RJ. [Regulation of Ca2+ transient by PP2A in normal and failing heart.](http://www.ncbi.nlm.nih.gov/pubmed/25688213) Front Physiol. 2015 Jan 29;6:13. doi: 10.3389/fphys.2015.00013. Review. PMID:25688213 (Ke Y, the corresponding author)
34. Wang Y, Tsui H, Bolton EL, Wang X, Huang CL, Solaro RJ, **Ke Y**, Lei M. [Novel insights into mechanisms for **Pak1**-mediated regulation of cardiac Ca(2+) homeostasis.](http://www.ncbi.nlm.nih.gov/pubmed/25852566) Front Physiol. 2015 Mar 17;6:76. doi: 10.3389/fphys.2015.00076. eCollection 2015. Review. PMID:25852566
35. Davis RT 3rd, Simon JN, Utter M, Mungai P, Alvarez MG, Chowdhury SA, Heydemann A, **Ke Y**, Wolska BM, Solaro RJ. [Knockout of p21-activated kinase-1 attenuates exercise-induced cardiac remodelling through altered calcineurin signalling.](http://www.ncbi.nlm.nih.gov/pubmed/26464331) Cardiovasc Res. 2015 Dec 1;108(3):335-47. doi: 10.1093/cvr/cvv234. Epub 2015 Oct 12. PMID: 26464331
36. Egom EE, Bae JS, Capel R, Richards M, **Ke Y**, Pharithi RB, Maher V, Kruzliak P, Lei M. [Effect of sphingosine-1-phosphate on L-type calcium current and Ca(2+) transient in rat ventricular myocytes.](http://www.ncbi.nlm.nih.gov/pubmed/27372350) Mol Cell Biochem. 2016 Aug;419(1-2):83-92. doi: 10.1007/s11010-016-2752-8. Epub 2016 Jul 2. PMID: 27372350

**Submitted or In-Revision Peer-reviewed journal articles**

1. Tomomi Ohmura, Yufeng Tian, Nicolene Sarich, **Yunbo Ke**, Angelo Meliton,

Alok S. Shah, Katrin Andreasson, Konstantin G. Birukov, Anna A. Birukova Regulation of lung endothelial permeability and inflammatory responses by prostaglandin A2: role of EP4 receptor,*Molecular Biology of the Cell* **(**In press**)**

**Major Invited Speeches**

Local

1. Rush University: Activation of phosphatase PP2A by Pak1—What does it mean in cardiovascular diseases (2004)
2. Northwestern University: Regulation of myofilament proteins by Pak1 in cardiomyocytes (2006)
3. Loyola University: Pak1 is a potential therapeutic target in heart failure (2007)

National

1. National Institute on Aging (NIH): Pak1 function in SA nodal and endothelial cells (2006)

International

1. New Horizon in Calcium signaling-Beijing: Regulation of Ca signaling by Pak1 in the heart (2010)
2. University of Manchester, UK: Activation of Pak1 as a novel therapeutic strategy (2012)
3. ISHR (International Society of Heart Research meeting): Regulation of Pak1 by peptide in cardiomyocytes and in mouse heart (2011)
4. Myofilament meeting-Madison, WI: Regulation of myofilament activities by Pak1 and PP2A (2014)
5. Experimental Biology Conferences, San Diego: HGF enhances endothelial barrier function through microtubule signaling (2016).
6. Ninxia University, Inner Mongolia University and Baotou university of science and technology: Pak1-mediated signaling in the heart (2016).
7. The International Symposium on the Frontier of Big Data in Science， Baotou, Inner Mongolia (July, 2016): Pak1 as a novel therapeutic target for heart diseases.