

Keki R. Balsara, MD

**Personal Information**

Gender: Male  
Date of Birth: March 9, 1977

**Citizenship**

Citizen: USA

**Address and Phone**

Office Vanderbilt University Medical Center  
1215 21<sup>st</sup> Avenue South, Suite 5025  
Nashville, TN 37232

**Present Position**

2018 – Present Assistant Professor of Surgery  
Department of Cardiac Surgery  
Vanderbilt University Medical Center  
Nashville, TN 37232

**Education**

Undergraduate

1994 – 1998 Bachelor of Arts – Summa Cum Laude  
Biological Basis of Behavior and European History  
University of Pennsylvania  
Philadelphia, PA 19103

Graduate

1998 – 2003 Doctor of Medicine  
University of Pennsylvania School of Medicine

Philadelphia, PA 19103

2017 – 2019 Masters of Business Administration  
Wharton School of Finance  
University of Pennsylvania  
Philadelphia, PA 19103

## Positions Held

2014 – 2018 Assistant Professor of Surgery  
Division of Cardiothoracic Surgery  
Washington University School of Medicine  
St. Louis, Missouri 63110

2015 – 2017 Surgical Director  
Cardiothoracic Surgical ICU  
Barnes-Jewish Hospital  
Washington University School of Medicine  
St. Louis, Missouri 63110

2011 – 2014 Resident, Division of Cardiothoracic Surgery  
The Johns Hopkins Hospital  
Baltimore, Maryland 21287

2010 – 2011 Surgical Critical Care Fellow, Department of Surgery  
Duke University Medical Center  
Durham, North Carolina 27710

2009 – 2010 Chief Resident, Department of Surgery  
Duke University Medical Center  
Durham, North Carolina 27710

2008 – 2009 Senior Assistant Resident, Department of Surgery  
Duke University Medical Center  
Durham, North Carolina 27710

2006 – 2009 Post-doctoral Research Fellow, Department of Surgery  
Duke University Medical Center  
Durham, North Carolina 27710

2005 – 2006 Senior Assistant Resident, Department of Surgery  
Duke University Medical Center  
Durham, North Carolina 27710

2004 - 2005 Junior Assistant Resident, Department of Surgery  
Duke University Medical Center  
Durham, North Carolina 27710

2003 – 2004 Intern, Department of Surgery  
Duke University Medical Center  
Durham, North Carolina 27710

#### Medical Licensure and Board Certifications

2018 – Present State of Tennessee

2015 - Present State of Illinois

2014 - Present State of Missouri

2011 - Present State of Maryland

2011 – American Board of Surgery – Surgery #56323

2012 – American Board of Surgery – Surgical Critical Care #3075

2015 – American Board of Thoracic Surgery #8102

#### **Honors and Awards**

Dean's List 1994 – 1998 – University of Pennsylvania

Benjamin Franklin Scholar/General Honors Program - University of Pennsylvania

University Scholar – University of Pennsylvania

Penn Medical Scholar – University of Pennsylvania

Phi Beta Kappa – University of Pennsylvania

Danny O. Jacobs Award for Surgical Excellence – Duke University Medical Center

2016 American Association of Thoracic Surgery Leadership Academy

#### **Professional Societies and Organizations**

International Society for Heart and Lung Transplantation

Society of Thoracic Surgeons

American College of Surgeons – Associate Fellow

Southern Thoracic Surgical Society

#### **Invited Reviewer**

Allergy – The European Journal of Allergy and Immunology

Journal of Thoracic and Cardiovascular Surgery

Annals of Thoracic Surgery

Journal of Heart Failure

ISHLT Scientific Committee

## Clinical Trials

Principle Investigator – LEVO-CTS Multicenter Randomized Clinical Trial

## Funding

Joel D. Cooper Career Development Award – International Society of Heart and Lung Transplantation – *Innate Immune Mechanisms of Myocardial Inflammation Following Transplantation* – 2017 – 2019 - \$160,000

## Book Chapters

Tellor, BR, **Balsara KR**. ICU Pharmacology. Evans A, et al (eds) Modern Concepts and Practices in Cardiothoracic Critical Care. 2015

Shah AS, **Balsara KR**. Blunt Cardiac Injury. Cameron JC and Cameron A (eds) Current Surgical Therapy. 2013

**Balsara KR**, Picket LC. Surgical Management of Esophageal Varices. 2010

**Balsara KR**, et al. Elsevier Video Textbook. 2010

**Balsara KR**, Portenier D. Laparoscopic Exposure of the Spine. Pappas TN, Chekan EG, Eubanks S, (eds) Atlas of Laparoscopic Surgery. 2010

## Bibliography

### Publications:

**Balsara KR**, Krupnick AS, Bell JM, Khiabani A, Scavuzzo M, Hachem R, Trulock E, Witt C, Byers DE, Yusen R, Meyers B, Kowzower B, Patterson GA, Puri V, Kreisel D. A Single Center Experience of 1500 Lung Transplant Patients. *Journal of Thoracic and Cardiovascular Surgery*, Accepted.

Ogawa M, Masood MF, Ewald GA, Vader JM, LaRue SJ, Cheng A, **Balsara KR**, Itoh A. Internal Driveline Damage Under the Costal Margin Several Years after Heartmate II Implant: A Series of Three Cases. *Journal of Artificial Organs*, March 3, 2018.

Chang SH, Kreisel D, Marklin GF, Cook L, Hachem R, Kowzower BD, **Balsara KR**, Bell JM, Frederiksen C, Meyers BF, Patterson GA, Puri V. Lung Focused Resuscitation at a Specialized Donor Care Facility Improves Lung Procurement Rates. *Annals of Thoracic Surgery*, January 11, 2018; S0003-4975(18):30015-8.

Lawton JS, Moon MR, Liu J, Koerner DJ, Kulshrestha K, Damiano RJ, Maniar H, Itoh A, **Balsara KR**, Masood MF, Melby SJ, Pasque MK. The Profound Impact of Combined Severe Acidosis and Malperfusion on Operative Mortality in the Surgical Treatment of Type A Aortic Dissection. *Journal of Thoracic and Cardiovascular Surgery*, March 2018; 155(3): 897-904.

**Balsara KR**, Puri V, Kreisel D. Ex vivo lung perfusion: Perfusing less lung can yield more lungs. *Journal of Thoracic and Cardiovascular Surgery*, July 19, 2017; S0022-5223(17)31398-3.

Tepper S, Masood MF, Baltazar Garcia M, Pisani M, Ewald GA, Lasala JM, Bach RG, Singh J, **Balsara KR**, Itoh A. Left Ventricular Unloading by Impella Device Versus Surgical Vent During Extracorporeal Life Support. *Annals of Thoracic Surgery*, March 24, 2017; S0003-4975(17)30039-5.

**Balsara, KR**, Bierhals A, Vader J, Pasque M, Itoh A. Implantation of a Left Ventricular Assist Device in a Patient with Left Ventricular Non-compaction. *Journal of Cardiac Surgery*., February 2017; 32(2):159-161 .

Ogawa M, **Balsara KR**, Masood MF, Itoh A. Extracorporeal Left Ventricular Circulatory Support as a Bridge to Implantable LVAD for a Patient with Pan-Left Ventricular Thrombosis. *ASAIO*, Aug 22 2016.

Melby SJ, Saint LL, **Balsara K**, Itoh A, Lawton JS, Maniar H, Pasque MK, Damiano RJ, Moon MR. Complete Coronary Revascularization Improves Survival in Octogenarians. *Annals of Thoracic Surgery*, April 2016; 4975(16):78-83.

Aguilar PR, **Balsara K**, Itoh A, Kollef MH. A Noteworthy Case of Acute Bronchitis. *Annals of the American Thoracic Society*, February 2016; 13(2): 285-287.

Swinney C, Itoh A, Keith A, **Balsara K**, Joseph S, Silvestry S. Defining the Impact of Intra-aortic Balloon Pump Settings on Ventricular Assist Device Flow. *Journal of Heart and Lung Transplantation*, July 2015; 34(7): 993-995.

**Balsara KR**, Balderson SS, D'Amico TA. Surgical Techniques to Avoid Parenchymal Injury During Lung Resection (Fissureless Lobectomy). *Thoracic Surgery Clinics*, August 2010; 20 (3): 365-369.

Parsa CJ, Daneshmand MA, Lima B, **Balsara KR**, McCann RL, Hughes GC. Utility of Remote Wireless Pressure Sensing for Endovascular Leak Detection After Endovascular Thoracic Aneurysm Repair. *Annals of Thoracic Surgery*, February 2010; 89(2): 446-452.

Hughes GC, Daneshmand MA, **Balsara KR**, Achneck HA, Sileshi B, Lee SM, McCann RL. "Hybrid" Repair of Aneurysms of the Transverse Aortic Arch: Medium Results. *Annals of Thoracic Surgery*. December 2009; 88(6): 1882-1887.

**Balsara KR**, Morozowich ST, Lin SS, Davis RD, Phillips-Bute BG, Hartwig M, Appel JZ, Welsby IJ. Aprotinin Use and Blood Product Transfusion in Off-Pump Bilateral Lung Transplantation. *Interactive Journal of Cardiothoracic Surgery*. January 2009; 8(1): 45-48.

Li B, Hartwig MG, Appel JZ, Bush EL, **Balsara KR**, Holzkecht ZE, Collins BH, Howell DN, Parker W, Lin SS, Davis RD. Chronic Aspiration of Gastric Fluid Induces the Development of Obliterative Bronchiolitis in Rat Lung Transplants. *American Journal of Transplantation*, August 2008; 8(8): 1614-21.

Barbas AS, Dowling T, **Balsara KR**, Davis RD, Parker W, Lin SS. Chronic Aspiration in a Murine Model of Asthma Shifts the Immune Mediated Response to a Type 1 Response. *European Journal of Clinical Investigation*. August 2008; 38(8): 596-602

Atkins BZ, Trachtenberg MS, Prince-Petersen R, Vess G, Bush EL, **Balsara KR**, Lin SS, Davis RD Jr. Assessing Oropharyngeal Dysphagia After Lung Transplantation: Altered Swallowing Mechanisms and Increased Morbidity. *Journal of Heart and Lung Transplantation*, November 2007; 26(11): 1144-1148.

Cantu E, **Balsara KR**, Li B, Lau C, Gibson S, Wyse A, Baig K, Gaca J, Gonzalez-Stawinski GV, Nichols T, Parker W, Davis RD. Prolonged Function of Macrophage, Von Willebrand Factor-Deficient Porcine Pulmonary Xenografts. *American Journal of Transplantation*, January 2007; 7 (1): 66-75.

Jaggers J, **Balsara KR**. Mediastinal Masses in Children. *Seminars in Thoracic and Cardiovascular Surgery*. Fall 2004; 16 (3): 201-8.

Kreisel D, Krasinskas AM, Krupnick AS, Gelman AE, **Balsara KR**, Popma SH, Riha M, Rosengard AM, Turka LA, Rosengard BR. Vascular Endothelium Does Not Activate CD4+ Direct Allorecognition in Graft Rejection. *Journal of Immunology*, September 1, 2004; 173 (5): 3027-34.

Krupnick AS, **Balsara KR**, Kreisel D, Riha M, Gelman AE, Estives MS, Amin KM, Rosengard BR, Flake AW. Fetal Liver as a Source of Autologous Progenitor Cells for Perinatal Tissue Engineering. *Tissue Engineering*. May-June 2004; 10 (5-6): 723-35.

Krupnick AS, Kreisel D, Riha M, **Balsara KR**, Rosengard BR. Myocardial Tissue Engineering and Regeneration as a Therapeutic Alternative to Transplantation. *Current Topics in Microbiology and Immunology*. 2004; 280:139-64

Krupnick AS, Zhu J, Nguyen T, Kreisel D, **Balsara KR**, Lankford EB, Clark CC, Levine S, Stedman HH, Shrager JB. Inspiratory Loading Does Not Accelerate Dystrophy in MCX

Mouse Diaphragm: Implications for Regenerative Therapy. *Journal of Applied Physiology*. February 2003; 94 (2): 411-9.

Kreisel D, Krupnick AS, **Balsara KR**, Riha M, Gelman AE, Popma SH, Szeto Y, Turka LA, Rosengard BR. Mouse Vascular Endothelium Activates CD8+ T Lymphocytes in a B7-Dependent Fashion. *Journal of Immunology*. December 1, 2002; 169 (11): 6154-61.

Krupnick AS, Kreisel D, Popma SH, **Balsara KR**, Szeto WY, Krasinskas AM, Riha M, Wells AD, Turka LA, Rosengard BR. Mechanism of T Cell-Mediated Endothelial Apoptosis. *Transplantation*. September 27, 2002; 74 (6): 871-6.

Kreisel D, Krupnick AS, Gelman AE, Engels FH, Popma SH, Krasinskas AM, **Balsara KR**, Szeto WY, Turka LA, Rosengard BR. Non-hematopoietic Allograft Cells Directly Activate CD8+ T Cells and Trigger Acute Rejection: An Alternative Mechanism of Allorecognition. *Nature Medicine*. March 2002; 8 (3): 233-9.

Kesari S, Lasner TM, **Balsara KR**, Randazzo BP, Lee VM, Trojanowski JQ, Fraser NW. A Neuroattenuated ICP 34.5-deficient Herpes Simplex Virus Type 1 Replicates in Ependymal Cells of the Murine Central Nervous System. *Journal of General Virology*. March 1998; 79 (Pt 3): 525-36.

### **Abstracts:**

**Balsara KR**, Joliff L, Masood M, Itoh A. Prolonged Ventilator Dependence Following LVAD Implant is an Independent Predictor of Reduced Survival. *International Society for Heart and Lung Transplantation*, April 2017.

**Balsara KR**, Joliff L, Masood M, Itoh A. Negative Pressure Dressings Reduce the Incidence of Driveline Infections Following LVAD Implantation. *International Society for Heart and Lung Transplantation*, April 2017.

**Balsara, KR**, Bierhals A, Vader J, Pasque M, Itoh A. Successful Implantation of Left Ventricular Assist Device for Cardiogenic Shock Secondary to Left Ventricular Non-Compaction. *International Society for Heart and Lung Transplantation*, April 2017.

Keith AD, Joseph SM, Godishala A, Khan A, Jarvis N, **Balsara KR**, LaRue S, Silvestry S, Itoh A. A Novel Socioeconomic Metric for Evaluating Outcomes after Left Ventricular Assist Device Implantation. *International Society for Heart and Lung Transplantation*, April 2015.

**Balsara KR**, Keith A, Abou El Ela A, Joseph SM, Ewald GA, Silvestry SC, Itoh A. Pre-Op Renal Failure Is Not Associated With Increased Mortality Following LVAD Implantation. *International Society for Heart and Lung Transplantation*, April 2015.

**Balsara KR**, Atkins BZ, Lee S, Walczak RJ, Davis RD, Lin SS. Modified Ultrafiltration for Patients Undergoing On-Pump Bilateral Orthotopic Lung Transplantation. *American Transplant Congress*, June 2008

**Balsara KR**, Cantu E, Bush EL, Appel JZ, Hartwig MG, Lin SS, Davis RD Jr. Early Fundoplication Reduces the Incidence of Chronic Allograft Dysfunction in Patients With Gastroesophageal Reflux Disease. Genzyme Advances in Organ Transplantation Fellows Conference, April 2008.

Reddy SLC, **Balsara KR**, Lin SS, Palmer S, Um JY, Catarino P, Bush E, Davis RD. Post Lung Transplantation Bronchiolitis Obliterans Syndrome: A Regression Analysis of Clinical Predictors. International Society for Heart and Lung Transplantation, April 2008.

**Balsara KR**, Cantu E, Bush EL, Appel JZ, Hartwig MG, Lin SS, Davis RD jr. Early Fundoplication Reduces the Incidence of Chronic Allograft Dysfunction in Patients With Gastroesophageal Reflux Disease. International Society for Heart and Lung Transplantation, April 2008.

Barbas AS, Dowling T, **Balsara KR**, Davis RD, Parker W, Lin SS. Chronic Aspiration Shifts the Immune Response from Th-1 to Th-2 in a Murine Model of Asthma. SAGES, April 2008.

Poh M, Petersen R, **Balsara KR**, Pappas T. Use of Component Separation in Complex Ventral Hernia Repair. American Association of Plastic Surgeons, April 2008.

**Balsara KR**, Morozowich ST, Bush EL, Phillips-Bute B, Hill M, Welsby IJ, Lin SS, Davis RD. Aprotinin Use Reduces Blood Product Transfusion in Off-Pump Bolt for COPD. Academic Surgical Congress, February 2008.

**Balsara KR**, Atkins BZ, Bush EL, Davis RD, Lin SS. The Effect of Vocal Cord Injury on Pulmonary Allograft Function Following Bilateral Orthotopic Lung Transplant. Academic Surgical Congress, February 2008.

Bush EL, **Balsara KR**, Cantu E, Appel JZ, Hartwig MG, Palmer SM, Lin SS, Davis RD Jr. Improved Early Outcome Following Lung Transplantation, 12-Year Experience. Academic Surgical Congress, February 2008.

Bush EL, Holzkecht Z, Li B, **Balsara KR**, Hartwig MG, Appel JZ, Collins BH, Parker W, Lin SS, Davis RD jr. Identification of Pulmonary Macrophage Subpopulations in Rat Lung Allografts Exposed to Chronic Gastric Fluid Aspiration. Academic Surgical Congress, February 2008.

**Balsara KR**, Morozowich ST, Bush EL, Phillips-Bute B, Hill M, Davis RD, Lin SS, Welsby IJ. Aprotinin Use and Primary Allograft Dysfunction Following Off-pump Bilateral Orthotopic Lung Transplantation. International Society of Heart and Lung Transplantation, April 2007.

Atkins BZ, Tractenberg M, **Balsara KR**, Vess G, Davis RD. Postoperative Swallowing Disorders are Associated with Increased Mortality After Lung Transplantation. International Society of Heart and Lung Transplantation, April 2007.



Bush EL, **Balsara KR**, Hartwig M, Phillips-Bute BG, Shaw A, Cantu E, Appell JZ, Davis RD, Welsby IJ, Linn SS. Perioperative Predictors of Renal Failure Following Off-Pump Primary double Lung Transplantation. International Society of Heart and Lung Transplantation, April 2007.

Bush EL, Appel J, Li B, **Balsara KR**, Hartwig M, Cantu E, Parker W, Davis RD, Lin SS. Chronic Aspiration in Lung Allotransplantation Induces a Donor-Specific Hyperimmune State. International Society of Heart and Lung Transplantation, April 2007.