OMB No. 0925-0001/0002 (Rev. 08/12 Approved Through 8/31/2015)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Lunsford, Keri Elizabeth, MD, PhD, FACS

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

POSITION TITLE: Assistant Professor of Surgery

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

| INSTITUTION AND LOCATION | DEGREE(if applicable) | Completion DateMM/YYYY | FIELD OF STUDY |
| --- | --- | --- | --- |
| Miami University, Oxford, Ohio | B.S. | 05/1999 | Biochemistry |
| The Ohio State University, Columbus, OH | Ph.D. | 06/2005 | Biomedical Science Emphasis in Immunology |
| The Ohio State University, Columbus, OH | M.D.  | 06/2007 | Medicine |
| Duke University, Durham, NC | Postdoctoral | 06/2011 | Surgical and Immunology Research  |
| Duke University, Durham, NC | Residency | 06/2013 | Residency in General Surgery |
| University of California, Los Angeles | Fellowship | 06/2015 | Abdominal Transplant & Hepatobiliary Surgery |

**A. Personal Statement**

My research interests center around developing an understanding of the state of immunologic dysfunction associated with end-stage liver disease and discerning how this dysfunctional state affects recipient post-transplant immunity. In this proposal, I outline a research plan to systematically investigate the role of immune cell bioenergetics and T cell dysfunction in the development of pre-transplant immune dysfunction (ie immunologic frailty), and seek to determine longitudinal effects of immunologic frailty on post-transplant immunity. Our approach is not only to define the state of immunologic frailty, but also to pinpoint therapeutic targets to improve long-term liver transplant outcomes. This research is synergistic with my clinical role as a liver transplant surgeon and will allow me to develop my potential as a bench-to-bedside physician-scientist and leader in the basic science community of transplant.

 I have been fortunate in my training to have excellent mentorship and a strong foundation in basic science. As an undergraduate at Miami University, I received training in molecular biology and biochemistry with Dr. Christopher Makaroff. I then obtained a foundation in cellular immunology while completing my MD and a PhD in transplant immunology with Dr. Ginny Bumgardner at The Ohio State University. As a surgical resident, I applied my basic science knowledge to the development of a novel mouse model for pancreatic ischemia-reperfusion injury. Following my clinical training, I was able to expand my research efforts and establish myself in the field of liver transplant immunology and transplant surgery as faculty at Houston Methodist Hospital under the mentorship of Dr. Mark Ghobrial and Dr. Xian Li, who are leaders in the fields of transplant and immunology. I was awarded an NIH K08 award for studies in the area of liver transplant recipient immunologic frailty in which the immune dysfunction of the patient prior to liver transplantation has a detrimental effect on recipient post-transplant outcomes. Subsequently, I have been offered the position of Assistant Professor of Surgery at Rutgers University, and I feel that the institutional environment will enhance my research efforts and increase my opportunities for success.

1. **Lunsford, Keri E.** and Fady M. Kaldas. Chapter 64: The Management of Cystic Disease of the Liver. In: Cameron JL and Cameron AM, eds. *Current Surgical Therapy, 12th Edition*. New York, NY, Elsevier, 2016: 335-342*.*
2. Ravindra, Kadiyala V., **Keri E. Lunsford**, and Paul C. Kuo. Chapter 13: Selection of the brain-dead potential organ donor.In: Novitzky D and Cooper DKC, eds. *The Brain-Dead Organ Donor: Pathophysiology and Management.* New York, NY: Springer Science and Business Media, 2013: 147-154.
3. Yi, Stephanie G., Richard J. Knight, and **Keri E. Lunsford**. BK Virus as a Mediator of Graft Dysfunction Following Kidney Transplantation. *Current Opinion in Organ Transplantation*. 2017 Aug; 22(4); 320-327.
4. Yi, Stephanie G, **Keri E. Lunsford**, Courtenay Bruce, and R. Mark Ghobrial. Conquering Combined Thoracic Organ and Liver Transplantation: Indications and Outcomes for Heart-Liver and Lung-Liver Transplantation. *Current Opinion in Organ Transplantation.* 2018 April; 23(2): 180-186.

**B. Positions and Honors**

**Research and Professional Experience**

* 1. Senior Honors Research Project, Miami University, Oxford, OH
1. Summer Internship, Atlantic Microlabs, Atlanta, GA
2. Roessler Medical Student Research Fellowship, Ohio State, Columbus, OH
	1. Medical Student Research Fellowship, The Ohio State University, Columbus, OH

2002-2007 Medical Scientist Program Fellowship, The Ohio State University, Columbus, OH

2007-2013 Residency in General Surgery, Duke University Medical Center, Durham, NC

2010-2011 Postdoctroal Research Fellowship, Duke University Medical Center, Durham, NC

2013-2015 Multi-Organ Transplant and Hepatobiliary Surgery Fellowship, UCLA, Los Angeles, CA

2013-2016 Clinical Instructor in Surgery, David Geffen School of Medicine at UCLA, Los Angeles, CA

2016-2019 Assistant Professor of Surgery – Weill Cornell Medical College, Houston Methodist Hospital, Houston, TX

2016-2019 Assistant Faculty Member, Houston Methodist Research Insititute, Houston, TX

2016-2019 Intitutional Review Board (IRB) member, Houston Methodist Hospital, Houston, TX

2017-present United Network for Organ Sharing (UNOS) Liver Regional Review Board Alternate

2017-present American Society of Transplant Surgeons Grant Review Committee Member

2018-present International Cholangiocarcinoma Research Network-Surgery/Transplant Work Group

2019-present United Network of Organ Sharing (UNOS) National Liver Review Board – Adult HCC

2019-present American Association for the Study of Liver Disease Public Policy Committee Member

2019-present International Liver Transplant Society-Diversity, Inclusion, & Equity Committee Member

2019-present Associate Editor – *Transplantation*

2019-present Assistant Professor of Surgery – Rutgers New Jersey Medical School, Newark, NJ

2019-present Member, Center for Immnuity and Inflammation Rutgers NJ Medical School, Newark, NJ

**Honors and Awards**

1. Georgia Chapter of Miami University Alumni Association Scholarship
2. Robert A. Stalzer Memorial Scholarship

1998 Goldie Nott Student Research Award

1998 Miami University Undergraduate Research Award

1998 ***Phi Beta Kappa***

1999 Graduation with Magna Cum Laude

1. Graduation with University Honors
2. Samuel J. Roessler Memorial Scholarship Fund
3. ADHF/AGA Student Research Fellowship

2001 Inter-Professional Council Professional Development Fund Award

2001 Landacre Research Honors Society

2001 Most Innovative Basic Science Presentation, Eastern Student Research Forum

2001 ***American Diabetes Association Medical Scholars Award***

2002-2007 Medical Scientist Program Fellowship, The Ohio State University

2002 Most Outstanding Poster Presentation OSU Health Sciences Research Day

2002 Zollinger-Ellison Scholarship Fund Award

2002 Most Outstanding Presentation in Surgery, National Student Research Forum,

2002-2005 ***American Diabetes Association Physician Scientist Training Award***

2003 Marion K. Hume Endowed National P.E.O. Scholars Award

2003 Travel Award for 2003 Basic Science Symposium

2004 2nd Place Overall Poster Presentation OSU Health Sciences Research Day

2005 Chancellor’s List

2005 Medical Student Council Professional Development Fund Award

2005 Inter-Professional Council Professional Development Fund Award

2005 Critical Difference for Women Professional Development Award

2006 The Ohio State University Surgery Honors Program

2006 Chancellor’s List

2007 Zollinger Award in Surgery

2007 Medical Scientist Award, The Ohio State University College of Medicine

2011 Duke General Surgery ABSITE Performance Award

2012 Duke General Surgery Administrative Chief Resident

2016 Clinician Scientist Recruitment Program Award, Houston Methodist Hospital

2017-18, 2019 ***NIH NIDDK Extramural Physician Loan Repayment Award***

2017 Fellow of the American College of Surgeons

2018 Association of Women’s Surgeons Foundation Research Fellowship

2019 Super Doctors 2019 Texas Rising Star Award

2019 International Liver Transplant Society Young Investigator Award

**Professional Medical and Scientific Society Memberships**

Association of Women Surgeons American Society of Transplant Surgeons

American Physician Scientist Association American Society of Transplantation

Sabiston Surgical Society Association of Academic Surgeons

Longmire Surgical Society International Liver Transplant Society

American College of Surgeons American Medical Association

American Association for the Study of Liver Disease American Hepato-Pancreato-Biliary Association

International Hepato-Pancreato-Biliary Association

**C. Contribution to Science**

**Selected Pertinent Publications (from over 50)**

1. Hepatocyte transplantation may potentially provide definitive treatment for isolated liver metabolic disorders or a bridge to transplantation or organ recovery for acute liver failure. Despite the widespread success of orthotopic liver transplantation, isolated hepatocellular allografts have little long-term success. Previous work demonstrated that hepatocytes are highly susceptible to nonconventional pathways of acute rejection. This group of studies (1) analyzed the (CD4-independent) CD8-mediated rejection pathway, (2) characterized the humoral immune response elicited by allogeneic hepatocytes, (3) characterized costimulatory blockade pathways which abrogate rejection by these non-traditional pathways, and (4) the importance of the site of engraftment in the development of the immune response.
	1. Gao D, **Lunsford KE**, Eiring AE, Bumgardner GL. Critical role for CD8+ T cells in allograft acceptance induced by DST and CD40/CD154 costimulatory blockade. *American Journal of Transplantation*. 2004, 4(7): 1061-1070.
	2. Horne PH, **Lunsford KE**, Eiring AM, Wang Y, Gao D, Bumgardner GL. CD4+ T-cell-dependent immune damage of liver parenchymal cells is mediated by alloantibody. *Transplantation*. 2005, 80(4): 514-521.
	3. **Lunsford KE,** Horne PH, Koester MA, Dzeima HL, Eiring AM, Walker JP, Bumgardner GL. Activation and maturation of alloreactive CD4-independent, CD8+ cytolytic T cells. *American Journal of Transplantation*. 2006, 6(10): 2268-81.
	4. Horne PH, **Lunsford KE,** Walker JP, Koester MA, Bumgardner GL. Recipient immune repertoire and engraftment site influence the immune pathway effecting acute hepatocellullar allograft rejection. *Cell Transplantation.* 2008, 17(7): 829-844.
2. Since the 1960s, islet transplantation has been considered a potential cure of Type I Diabetes Mellitus. Despite promising experimental results, little success was achieved in human trials. In 2002, the Edmonton Protocol established successful islet engraftment in the majority of recipient, but longer-term follow-up demonstrated late failure islet transplants. These studies evaluated (1) the immune response elicited by islet allografts in comparison to other tissues, (2) the impact microenvironment on islet allograft acceptance and rejection, and (3) the ability of nontraditional immune pathways to disrupt long-term islet acceptance. Importantly, islet transplant failure in the context of local inflammation was not dependent upon traditional rejection responses (CD4+ T cell dependent), but may be related to local activation of unconventional immune responses that are not controlled by immunosuppression.
	1. **Lunsford KE**, Gao D, Eiring AE, Wang Y, Frankel WL, Bumgardner GL. Evidence for tissue directed immune responses: Analysis of CD4-dependent and CD8-dependent alloimmunity. *Transplantation*. 2004, 78(8): 1125-1133.
	2. **Lunsford KE**, Koester MA, Eiring AE, Gao D, Horne PH, Bumgardner GL. Targeting LFA-1 and CD154 suppresses the *in vivo* activation and development of cytolytic (CD4-independent) CD8+ T cells. *Journal of Immunology*. 2005, 175(12): 7855-7866.
	3. **Lunsford KE,** Jayashankar K, Eiring AM, Horne PH, Koester M, Gao D, Bumgardner GL. Alloreactive (CD4-independent) CD8+ T cells jeopardizes long-term survival of intrahepatic islet allografts. *American Journal of Transplantation.*  2008, 8(6): 1113-28.
3. Ischemia-reperfusion injury pathways result in deleterious activation of innate immune pathways that impact development of adaptive immune responses to transplanted tissue. Knowledge of the immunologic events surrounding pancreatic ischemia-reperfusion injury (IRI) was lacking. This research developed the first described murine model for ischemia reperfusion injury, and the model served as a basis for the immunologic characterization of pancreatic organ damage at transplantation.
	1. Brennan TV, **Lunsford KE,** Kuo PC.Innate Pathways of Immune Activation in Transplantation. Journal of Transplantation. 2010, vol 2010, ID 826240: 1-8.
	2. **Lunsford KE,** Baird BJ, Sempowski GD, Cardona DM, Weinhold KJ, Sudan DL, Brennan TV. Up-Regulation of IL-1β, IL-6, and CCL-2 by a Novel Mouse Model of Pancreatic Ischemia-Reperfusion Injury. *Transplantation*. 2013, 95 (8): 1000-1007.
4. Concurrent renal disease due to medical comorbidities or the development of hepato-renal syndrome is a major cause of morbidity and mortality among patients with cirrhosis. Outcomes in liver transplantation may be affected ongoing renal dysfunction, and simultaneous liver-kidney transplantation is one avenue by which this may be treated at the time of transplantation. This research evaluates the indications for simultaneous liver-kidney transplantation as well as factors that might be augmented to prevent futile utilization of kidneys for SLKT.
	1. Brennan TV\*, **Lunsford Keri E\***(\*Co-first authors), Vagefi PA, Bostrom A, Ma M, Feng S. Renal outcomes for simultaneous liver-kidney transplant compared to liver transplant alone for candidates with renal dysfunction. *Clinical Transplantation.* 2015, 29(1): 34-43.
	2. **Lunsford, Keri E.**, Adam S. Bodzin, Daniela Markovic, Ali Zarrinpar, Fady M. Kaldas, Hans Albin Gritsch, Victor Xia, Douglas G. Farmer, Gabriel M. Danovitch, Jonathan R. Hiatt, Ronald W. Busuttil, Vatche G. Agopian. Avoiding futility in simultaneous liver-kidney transplantation: a single center analysis of 331 consecutive patients listed for dual organ transplant in the MELD era. *Annals of Surgery*. 2017 May; 265(5): 1016-1024.
	3. Korayem, Islam M., Vatche G. Agopian, **Keri E. Lunsford**, Hans A. Gritsch HA, Jeffrey L. Veale, Gerald S. Lipshutz, Hasan Yersiz, Coney L. Serrone, Fady M. Kaldas, Douglas G. Farmer, Suphamai Bunnapradist, Gabriel M. Danovitch, Ronald W. Busuttil, Ali Zarrinpar. Factors Predicting Kidney Delayed Graft Function Among Recipients of Simultaneous Liver-Kidney Transplantation: Single Center Experience. *Clinical Transplantation*. 2019 Apr 21:e13569.  [Epub ahead of print].
	4. **Lunsford, Keri E**., Vatche G. Agopian, Stephanie G. Yi, Duc T.M. Nguyen, Edward A. Graviss, Michael P. Harlander-Locke, Ashish Saharia, Fady M. Kaldas, Constance M. Mobley, Ali Zarripar, Mark Hobeika, Jeffery L. Veale, Hemangshu Podder, Douglas G. Farmer, Richard J. Knight, Gabriel M. Danovitch, H. Albin Gritsch, Xian C. Li, R. Mark Ghobrial, Ronald W. Busuttil, A. Osama Gaber. Delayed Implantation of Pumped Kidneys Decreases Renal Allograft Futility in Combined Liver-Kidney Transplantation. *Transplantation.* 2019. In press.
5. Patients with cirrhosis are increasingly at risk for development of liver neoplasms, and liver transplantation is being increasingly performed for oncologic purposes. Current indications for liver transplantation include hepatocellular carcinoma and hilar cholangiocarcinoma, but there is increasing interest in expanding the indications of liver transplantation to include intrahepatic cholangiocarinoma, mixed hepatocholangiocarcinoma, colorectal liver metastases, and neuroendocrine tumors. These studies evaluate the outcomes in liver transplant patients undergoing transplant for oncologic indications.
	1. Bodzin, Adam S., **Keri E. Lunsford**, Daniela Markovic, Michael P. Harlander-Locke, Ronald W. Busuttil, and Vatche G. Agopian. Predicting Mortality in Patients Developing Recurrent Hepatocellular Carcinima after Liver Transplantation: Impact of Treatment Modality and Recurrence Characteristics. *Annals of Surgery.* *Annals of Surgery.* 2017 July; 266 (1): 118-125.
	2. **Lunsford, Keri E.**, Colin Court,Yong Seok Lee, David Lu, Bita Naini, Michael P. Harlander-Locke, Ronald W. Busuttil, Vatche G. Agopian. Comparative Analysis of Patients with Mixed Hepatocellular-Cholangiocarcinoma and Hepatocellular Carcinoma Undergoing Liver Transplantation: A Propensity Matched Cohort Analysis. *Liver Transplantation.* Epub 2018 March 23. 2018 October; 24(10):1384-1397.
	3. **Lunsford, Keri E,** Milind Javle, Kirk Heyne, Rachna T. Shroff, Reham Adel-Wahab, Nakul Gupta, Constance Mobley, Ashish Saharia, David W. Victor, Duc T. Nguyen, Eward A. Graviss, Ahmed O. Kaseb, Thomas A. Aloia, Claudius Conrad, Howard Monsour, Jean-Nicolas Vauthey, A. Osama Gaber, R. Mark Ghobrial. Liver Transplantation for Locally Advanced Unresectable Intrahepatic Cholangiocarcinoma Treated with Neoadjuvant Therapy: Preliminary Experience from the Methodist-MD Anderson Collaborative. *Lancet Gastroenterology and Hepatology.* 2018 May; 3(5): 337-348.
	4. Victor, David W. III, Howard P. Monsour Jr., Maha Boktour, **Keri E. Lunsford**, Julius Balogh, Edward Graviss, Duc Nguyen, Robert Mcfadden, Mukul K. Divatia, Kirk Heyne, Victor Ankoma-Sey, Chukwuma Egwim, Joseph Galati, Andrea Duchini, Ashish Saharia, Constance M. Mobley, A. Osama Gaber, R. Mark Ghobrial. Outcomes of Liver transplantation for hepatocellular carcinoma (HCC) beyond the University of California San Francisco (UCSF) criteria: A single center experience. *Transplantation.* In Press.

**Complete List of Published Work in My Bibliography:**

<https://www.ncbi.nlm.nih.gov/sites/myncbi/1FcY9vf2X1VkJ/bibliography/47893314/public/?sort=date&direction=ascending>

# D. Research Support

**Current Research Support**

1. Title: Defining Immunologic Frailty as a Predictor of Human Liver Allograft Recipient

Futility

Role: Principle Investigator

Sponsor: NIH K08 DK118187-01

Dates: April 2019 – March 2024 (pending transfer to Rutgers NJMS)

2. Title: Evaluation of Pre-Transplant T cell Exhaustion as a Mechanism for Recipient

 Immune Dysfunction and Liver Transplant Futility

 Role: Principle Investigator

 Sponsor (Amount): Association of Women Surgeons Foundation

 Dates: November 15, 2018 – November 30, 2019

3. Title: Clinician Scientist Seed Grant

 Role: Principle Investigator

 Sponsor: Rutgers / RJW Barnabus Health

 Dates: October 1, 2019 – September 1, 2023

**Completed Research Support (Most recent 5 years)**

1. Title: Immune Perturbance Following Orthotopic Liver Transplantation

Role: Principle Investigator (Mentors: Li and Ghobrial)

Sponsor (Dates): Houston Methodist Research Institute (April 2016 – March 2019), $250,000 / year

2. Title: OCS Liver Protect Trial

 Role: Co-investigator (R. Mark Ghobrial, MD, PhD – site PI)

 Sponsor (Dates): TransMedics (5/3/16-8/23/19)

3. Title: Sorafenib Therapy in High Risk OLT recipients with HCC

 Role: Co-investigator (R. Mark Ghobrial, MD, PhD – site PI)

 Sponsor (Dates): Bayer Pharmaceuticals (5/10/16-8/23/19)

4. Title: VTL-308– Alcohol-Induced Liver Decompensation – AILD (1)

 Role: Co-investigator (Constance M. Mobley, MD, PhD – site PI)

 Sponsor (Dates): Vital Therapies (5/10/16-8/23/2019)

5. Title: A Randomized, Global, Double-blind, Placebo-controlled, Parallel-group Study to

Evaluate the Efficacy and Safety of Once-daily Oral Avatrombopag for the Treatment of Adults with Thrombocytopenia Associated with Liver Disease Prior to an Elective Procedure

Role: Co-Investigator (Ali Zarrinpar, MD, PhD – PI)

Sponsor (Dates): Astellas Pharmaceuticals (June 2015 – February 2016)

1. Title: A Cohort-controlled Study to Evaluate the Efficacy and Safety of Machine Kidney

Perfusion in Patients Undergoing Simultaneous Liver and Kidney Transplantation

Role: Co-Investigator (Ali Zarrinpar, MD, PhD – PI)

Sponsor (Dates): Organ Recovery Systems (July 2015 – February 2016)