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## BIOGRAPHICAL SKETCH

Provide the following information for the applicant and other key personnel.  
**DO NOT EXCEED FOUR PAGES.**

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NAME Timmy Lee	POSITION TITLE Associate Professor of Medicine		
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Washington University in St. Louis	B.A	1997	Chemistry
Louisiana State University Health Sciences Center in Shreveport, LA	M.D.	2001	Medicine
University of Alabama at Birmingham School of Public Health	M.S.P.H	2007	Epidemiology

### A. Personal Statement

I have been involved in hemodialysis vascular access research since 2003 with a clinical and translational focus in this area. My areas of clinical research interests within vascular access focus on epidemiologic and observational studies, and clinical trials. My translational research in vascular access focuses on understanding the pathophysiology of vascular access stenosis using histology, immunohistochemistry, imaging, and molecular biology techniques. Work from our group has focused on characterizing the biology of venous neointimal hyperplasia from patient samples at the time of new arteriovenous access creation. Recently, our group has developed animal models to further elucidate mechanisms of neointimal hyperplasia development in arteriovenous accesses. The long-term goal from our research group is focused on elucidating mechanisms that lead to arteriovenous fistula maturation failure and arteriovenous graft stenosis, and developing novel therapies to improve arteriovenous fistula maturation and graft stenosis.

### B. Positions and Honors Positions and Employment

July 2001- June 2004:	Internal Medicine Residency, University of Alabama at Birmingham, AL
July 2004- July 2007:	Nephrology Fellowship, University of Alabama at Birmingham, AL
August 2007-August 2012:	Assistant Professor of Clinical Medicine, Division of Nephrology and Hypertension, University of Cincinnati, OH
November 2008-June 2012:	Staff Nephrologist, Department of Veterans Affairs Medical Center, Cincinnati, OH
September 2012-June 2012:	Associate Professor of Clinical Medicine, Division of Nephrology and Hypertension, University of Cincinnati, OH
July 2013-present:	Associate Professor of Medicine, Division of Nephrology, University of Alabama at Birmingham (tenure-track)
July 2013-present	Associate Director, Section of Interventional Nephrology, University of Alabama at Birmingham
February 2014-present	Staff Nephrologist, Department of Veterans Affairs Medical Center, Birmingham, AL
February 2014-present	Medical Director of Hemodialysis, Department of Veterans Affairs Medical Center, Birmingham, AL

### Other Experience and Professional Memberships:

2008-present	Fellow, American College of Physicians
2009-present	Fellow, American Society of Nephrology

2010-present	American Society of Diagnostic and Interventional Nephrology Research Subcommittee
2012-2013	Reviewer, American Heart Association Vascular Wall Biology-Clinical Section Grant Peer Review Committee
2012-2014	Program Committee, National Kidney Foundation Spring Clinical Meetings
2012-present	Chair, American Society of Diagnostic and Interventional Nephrology, Basic and Translational Science Work Group
2013-present	Member, UAB Nephrology Research Training Center (NRTC)
2014-present	Member, Southern Society of Clinical Investigation

### **Honors:**

1995	National Science Foundation Research Fellowship, Washington University in St. Louis, MO
1996	Howard Hughes Medical Institute Biophysics Research Fellowship, Washington University in St. Louis, MO
2004	The Thomas N. James Award for Excellence in Research, Honorable Mention, Poster Presentation at the "2005 Training Research Symposium", Department of Medicine, University of Alabama at Birmingham, AL
2005	Second Place, National Kidney Foundation of Georgia "Nephrology and Transplantation 2005 Update" Annual Poster Session
2006	Second Place, National Kidney Foundation of Georgia "Nephrology and Transplantation 2006 Update" Annual Poster Session
2006	University of Alabama at Birmingham Clinical Investigator Research Fellowship Award
2006	National Kidney Foundation Research Fellowship Award
2006	University of Alabama at Birmingham NIH K30 Clinical Research Training Program (CRTP)
2006	Southern Society of Clinical Investigation Nephrology Young Investigator Scholar Award
2007	Honorable Mention in Clinical Research Category, Southern Society of Clinical Investigation Nephrology Young Investigator Forum
2007	Southern Society of Clinical Investigation Nephrology Young Investigator Scholar Award
2009	NIH Mentored Patient-Oriented Research Career Development Award (K23) (2009-2014)
2010	National Institutes of Health Loan Repayment Program Recipient (2010-2013)
2010	National Kidney Foundation Franklin McDonald/Fresenius Medical Care Young Investigator Clinical Research Award (2010-2013)
2011	Top Abstract and Oral Presentation, 7 <sup>th</sup> Congress of Vascular Access Society, Istanbul, Turkey
2013	American Society of Nephrology Advances in Research Conference Travel Support
2014	American Society of Nephrology Carl W. Gottschalk Research Scholar Grant (2014-2016)
2014	American Society of Nephrology Dialysis Advisory Group (2014-2017)
2014	Satellite Healthcare Norman S. Coplion Extramural Research Grant (returned due to overlap with ASN Carl W. Gottschalk Award)

### **C. Peer-reviewed Publications**

1. **Lee T**, Barker J, Allon M. Associations with Predialysis Vascular Access Management. *Am J Kidney Dis* 43: 1008-1013, 2004. PMID: 15168380
2. **Lee T**, Barker J, Allon M. Tunneled Catheters in Hemodialysis Patients: Reasons and Subsequent Outcomes. *Am J Kidney Dis* 46: 501-508, 2005. PMID: 16129212
3. **Lee T**, Barker J, Allon M. Needle Infiltrations of Arteriovenous Fistulas in Hemodialysis: Risk Factors and Consequences. *Am J Kidney Dis* 47: 1020-1026, 2006. PMID: 16731297
4. **Lee T**, Barker J, and Allon M. Comparison of Survival of Upper Arm Arteriovenous Fistulas and Grafts after Failed Forearm Fistula. *J Am Soc Nephrol* 18: 1936-1941, 2007. PMID: 17475812
5. Roy-Chaudhury P and **Lee T**. Vascular Stenosis: Biology and Interventions. *Curr Opin Nephrol Hypertens* 16: 516-522, 2007. PMID: 18089964
6. Roy-Chaudhury P, **Lee T**, Duncan H, and El-Khatib M. Combining Novel Technologies with Improved Logistics to Reduce Hemodialysis Vascular Access Dysfunction. *J Vasc Access* 10: 1-4, 2009. PMID: 19340792

7. **Lee T** and Roy-Chaudhury P. Advances and New Frontiers in the Pathophysiology of Venous Neointimal Hyperplasia and Dialysis Access Stenosis. *Adv Chronic Kidney Dis* 16: 329-338, 2009. PMID: PMC2764321
8. Xi W, MacNab J, Lok C, **Lee T**, Maya I, Mokrzycki M, Moist LM. Who is eligible for a fistula? A survey of nephrologists. *Nephrol Dial Transplant* 25: 2644-51, 2010. PMID: PMC3108364
9. Yevslin AS, Chan MR, Becker YT, Roy-Chaudhury P, **Lee T**, Becker BN. "Venopathy" at Work: Recasting Neointimal Hyperplasia in a New Light. *Transl Res* 156: 216-225, 2010. PMID: 20875897
10. **Lee T**, Ullah A, Allon M, Succop P, El-Khatib M, and Roy-Chaudhury P. Decreased Cumulative Access Survival in Arteriovenous Fistulas Requiring Interventions to Promote Maturation *Clin J Am Soc Nephrol* 6: 575-581, 2011. PMID: PMC3082416
11. **Lee T**, Chauhan V, Krishnamoorthy M, Wang Y, Arend L, El-Khatib M, Munda R, and Roy-Chaudhury P. Severe Venous Neointimal Hyperplasia Prior to Dialysis Access Surgery. *Nephrol Dial Transplant* 26: 2264-70, 2011. PMID: PMC3145379
12. **Lee T**, Roy-Chaudhury P, Thakar CV. Improving Incident Fistula Rates: A Process of Care Issue. *Am J Kidney Dis* 57: 814-817, 2011. PMID: PMC3966103
13. **Lee T**, Mokrzycki MH, Moist LM, Maya I, Vazquez M, and Lok CE. Standardized Definitions for Hemodialysis Vascular Access. *Semin Dial* 24: 515-24, 2011. PMID: PMC3999346
14. **Lee T** and Wadehra D. Genetic Causation of Neointimal Hyperplasia in Hemodialysis Vascular Access Dysfunction. *Semin Dial* 25: 65-73, 2012. PMID: PMC3965266
15. Roy-Chaudhury P, El-Khatib M, Campos-Naciff B, Wadhera D, Ramani K, Leesar M, Mistry M, Wang Y, Chan JS, **Lee T**, and Munda R. Back to the Future: How Biology and Technology Could Change the Role of PTFE Grafts in Vascular Access Management. *Semin Dial* 25: 495-504, 2012. PMID: 22908978
16. **Lee T**, Safdar N, Mistry M, Wang Y, Chauhan V, Campos B, Munda R, Cornea V, and Roy-Chaudhury P. Pre-existing Venous Calcification Prior to Dialysis Vascular Access Surgery. *Semin Dial* 25: 592-95, 2012. PMID: PMC3961753
17. **Lee T**, Lok CE, Vazquez M, Moist LM, Maya I, and Mokrzycki M. Minimizing Hemodialysis Catheter Dysfunction: "An ounce of prevention...". *Int J Nephrol* 2012: 170857, 2012. PMID: PMC3299246
18. Roy-Chaudhury P, **Lee T**, Woodle B, Wadehra D, Campos-Naciff B, and Munda R. Balloon-assisted Maturation (BAM) of the Arteriovenous Fistula: the Good, the Bad, and the Ugly. *Semin Nephrol* 32: 558-63, 2012. PMID: 23217336
19. Roy-Chaudhury P, Chan JS, **Lee T**, Mistry M, Campos B, Wang Y, Munda R. Of Veins, Valves, and Vascular Access! *Kidney Int* 82: 1236-1237, 2012. PMID: 23151987
20. Moist LM, Lok CE, Vachharajani TJ, Xi W, Aljaishi A, Polkinghorne KR, Vazquez M, and **Lee T**. Optimal Hemodialysis Vascular Access in the Elderly Patient. *Semin Dial* 25: 640-8, 2012. PMID: PMC3999348
21. **Lee T**, Tindni A, and Roy-Chaudhury P. Improved Cumulative Survival in Fistulas Requiring Surgical Interventions to Promote Maturation Compared to Endovascular Interventions. *Semin Dial* 26: 85-9, 2013. PMID: PMC3965258
22. Moist LM, **Lee T**, Lok CE, Al-Jaishi A, Xi W, Campbell V, Graham J, Wilson B, Vachharajani TJ. Education in Vascular Access. *Semin Dial* 26: 148-153, 2013. PMID: 23432319
23. Nica A, Lok CE, Harris J, **Lee T**, Mokrzycki M, Maya I, Vazquez M, Xi W, and Moist L. Understanding Surgical Preference and Practice in Hemodialysis Vascular Access Creation. *Semin Dial* 26: 520-526, 2013. PMID: 23517536
24. Campos B, **Lee T**, and Roy-Chaudhury P. Arteriovenous Fistula Failure, Is There a Role for Epigenetic Regulation? *Semin Nephrol* 33: 400-406, 2013. PMID: 24011582
25. **Lee T**. Novel Paradigms for Dialysis Vascular Access: Downstream Vascular Biology-Is There a Final Common Pathway? *Clin J Am Soc Nephrol* 8: 2194-2201, 2013. PMID: PMC3848398
26. Roy-Chaudhury P, **Lee T**, Munda R. Predicting Dialysis Vascular Access Blood Flow and Diameter: Too Much, Too Little, or Just Right. *Kidney Int* 84:1076-1078, 2013. PMID: 24280751
27. Vachharajani TJ, Moist LM, Vazquez M, Polkinghorne KR, Lok CE, and **Lee T**. Dilemmas of Vascular Access Care in the Elderly with Chronic Kidney Disease. *Nat Rev Nephrol* 10:116-22, 2014. PMID: 24296629
28. Campos B, Wang Y, Mistry M, Woodle B, Cornea V, **Lee T**, and Roy-Chaudhury P. Pathogenic Role of Early Macrophage Infiltration in a Pig Model of Arteriovenous Fistula (AVF) Stenosis. *J Vasc Access* 15:25-28, 2014. PMID: 24043320

29. **Lee T**, Wang Y, Arend L, Cornea V, Campos B, Munda R, Roy-Chaudhury P. Comparative Analysis of Cellular Phenotypes Within the Neointima From Vein Segments Prior to Access Surgery and Stenotic Arteriovenous Dialysis Accesses. *Semin Dial* 27:303-309, 2014. PMID: PMC3999181
30. **Lee T**, Somarathna M, Hura A, Wang Y, Campos B, Arend L, Munda R, and Roy-Chaudhury P. Natural History of Venous Morphologic Changes in Dialysis Access Stenosis (in press *J Vasc Access*), 2014 PMID: 24500849
31. Chan, JS, Campos B, Wang Y, Mistry M, **Lee T**, Munda R, Arend L, Roy-Chaudhury P. Proliferation Patterns in a Pig Model of AV Fistula Stenosis: Can we Translate Biology into Novel Therapies? (in press *Semin Dial*), 2014.

## **D. Research Support**

### **Ongoing Research Support**

Career Development Award 7/1/2014-6/30/2016 (award funded)  
 American Society of Nephrology Carl W. Gottschalk Research Scholar Grant  
 Role: Principal Investigator  
 Title: Natural History of Arteriovenous Fistula Maturation  
 The goal of this study is to evaluate the pathobiology of vascular injury in arteriovenous fistula development

Proteon Therapeutics, Inc. 8/1/2014-7/30/2015  
 Role: Principal Investigator  
 Title: Multicenter, Double-Blind, Placebo-Controlled Study of PRT-201 Administered Immediately After Radiocephalic Arteriovenous Fistula Creation in Patients with Chronic Kidney Disease  
 The goal of this study is to evaluate arteriovenous fistula maturation outcomes of PRT-201 administration compared to placebo in radiocephalic arteriovenous fistula

### **Completed Research Support**

Research Fellowship 7/1/2006-7/2007  
 National Kidney Foundation  
 Role: Principle Investigator  
 Routine Postoperative Ultrasonography to Improve Arteriovenous Fistula Outcomes  
 To evaluate the role of one-month postoperative ultrasonography after arteriovenous fistula placement on short and long term survival outcomes

Research Fellowship 7/1/2006-7/2007  
 University of Alabama at Birmingham Clinical Research Fellowship Award  
 Role: Principle Investigator  
 Routine Postoperative Ultrasonography to Improve Arteriovenous Fistula Outcomes  
 To evaluate the role of one-month postoperative ultrasonography after arteriovenous fistula placement on short and long term survival outcomes

Young Investigator Award 7/1/2010-6/30/2013  
 National Kidney Foundation  
 Role: Principal Investigator  
 Evaluating Processes of Care to Increase AVF Incidence  
 The goal of this study is to evaluate barriers in processes of care to improve AVF incident rates

7K23DK083528-05 7/1/2009-6/30/2014  
 NIH/NIDDK  
 Role: Principal Investigator  
 Title: Novel Biological Markers in Impaired Arteriovenous Fistula Maturation  
 The goal of this study is to evaluate novel biological markers that predict arteriovenous fistula maturation