



LEE, RICHARD

Northwestern Medical Faculty Foundation, Inc.

Richard Lee, MD, MBA
Assistant Professor of Surgery
Surgical Director of the
Center for Atrial Fibrillation

Division of Cardiothoracic Surgery
201 East Huron Street
Galter 11-140
Chicago, Illinois 60611-2968
Tel (312) 695-4867
Fax (312) 695-1903
E-mail ricklee@nmh.org

To: Sue Anne Tae
MSSRP Program Coordinator

From: Richard Lee, MD
Surgical Director, Center of Atrial Fibrillation

RE: Mentor Application- MSSRP

Dear Ms. Tae:

Of all the reasons I chose to enter academic medicine, the opportunity to be a mentor others has been the most rewarding. Of course I receive nearly indescribable rewards from helping each and every patient, as well as contributing to the literature in the hope of effecting a long-term improvement in clinical practice and patients' lives. However, passing on knowledge and a way of obtaining knowledge for oneself is the most durable way to contribute.

I have already had the privilege to work with many individuals at an earlier stage of training than myself. I am proud to have met many who will contribute much more than I ever will and hope I played a small role in that contribution. The reason to mentor is really very simple. Help the next generation avoid my mistakes and inefficiencies. If I can make it just a little easier for them, just maybe they can get a little further. If I really do my job well, they will do the same for the generations to follow. Among the benefactors will be my children and grandchildren.

The real question is "Am I qualified to be a mentor?"

Like being a parent, no one is really ever ready or qualified. The key is to try your best, improve on past mistakes and realize that every student and situation is different. The goal is to help them achieve their goals and dreams. That should be a mentor's goal.

• **Bluhm Cardiovascular Institute Research description:**

The BCVI has several research projects spanning the spectrum of cardiac surgery from basic science to clinical projects. The student can choose a project that is best suited to his/her interests and skill set. From there, a particular portion of the project will be dedicated to the individual student, with the goal of publishing the project. Regular meetings will be held with the mentor as part of the program. From this experience students will gain a general understanding of the research process, cardiac surgery procedures/techniques, complications, pre- and post-operative patient care, and outcomes. A variety of resources will be available to students including staff of the BCVI-Clinical Trials Unit, valvular and atrial fibrillation nurse specialists, research nurses, biostatisticians, and the perioperative care team including nurse practitioners and cardiac surgery fellows. In addition, students will have opportunities to develop skills in diagnosis and management of patients with cardiovascular disease by observing the

activities of the cardiac catheterization, electrophysiology, and echocardiography labs, observing in the operating room, spending time in cardiothoracic ICU, and participating in post-operative rounds.

Research is being conducted in the following areas:

- Basic Science
- Translational Science
- Clinical Science
- Other _____

Our active research projects include:

Atrial Fibrillation

Atrial fibrillation (AF) is a complex arrhythmia; its precise mechanisms remain unclear, and the clinical presentation, arrhythmia characteristics, and underlying pathophysiology are variable. Across the United States approximately 36% of patients who have a history of AF receive treatment when they undergo other concomitant heart operations. In comparison, 86% of patients undergo surgical treatment at Northwestern. We expect that students will become familiar with all aspects of atrial fibrillation, how it relates to cardiac surgery patients, and heart patients in general, and how a properly designed study is analyzed and reported. Current AF research projects include:

1. Cardiac autonomic innervation inhibition and AF: In collaboration with Drs. Alan Kadish and Rishi Arora, we are studying the role of selective cardiac autonomic innervation inhibition in the induction and maintenance of atrial fibrillation. This is performed in a large animal model and requires an interest and skill set for bench laboratory work. The student's role for this project will be independent project testing parasympathetic inhibition of isolated cardiomyocyte.
2. Hybrid Maze Approach for treatment of AF: In a clinical model, we are performing a Hybrid Maze based upon collaboration between the clinical electrophysiologists and cardiac surgeons. In this approach, we utilize various strengths of procedures performed by each specialty and combine them to offer minimally invasive options for patients. The student's role for this project will be to collect outcomes of Hybrid Maze and develop an abstract to present findings.
3. Outcomes of Surgical Treatment for AF: based research, we are reviewing our data for several hundred patients who have undergone surgery for atrial fibrillation to define the appropriate candidates, operative techniques and compare long-term outcomes. The student's role for this project will be to analyze outcomes of different surgical techniques and energy sources (cut and sew, vs. cryoablation, vs. radiofrequency ablation; Maze procedures performed in the right atrium only, the left atrium only, or both).

Mitral Valve Disease

Remarkable advances have been made in the last three decades in terms of understanding, diagnosing and managing valvular heart disease. Mitral regurgitation (MR) is the most commonly encountered valve lesion in modern clinical practice with approximately 500,000 cases diagnoses annually in the US. Current MV research projects include:

1. Quantitative assessment of mitral valve (MV) pathology: Currently, surgeons at NMH are directly measuring multiple aspects of the mitral valve using specially designed calipers. Information

gathered from this investigation could potentially allow for tailoring of the valve repair techniques to allow for a more predictable repair. This in turn may help advance this surgical technique from an art to a science. The student's role in this investigation will be to analyze the direct measurements to determine if an algorithm can be developed to facilitate repair techniques.

2. The optimal treatment of ischemic mitral regurgitation (IMR) is a matter of controversy and there is still wide variation in practice among cardiovascular surgeons. We aim to investigate the efficacy of a new annuloplasty ring (CMA IMR) in surgical treatment of IMR. The student's role in this project will be to assess the effects of the CMA IMR ring on mitral valve geometry, as measured by 2D/3D echocardiography, and to evaluate the early results of valve repair in terms of the reduction of mitral regurgitation.

Tricuspid Valve Disease

Until recently, surgery for tricuspid valve disease has been relatively ignored. We have a limited understanding of implications of tricuspid regurgitation and its repair in cardiac surgery. We do know, however that patients with tricuspid regurgitation have much worse outcomes after cardiac surgery than patients who do not have tricuspid regurgitation. The current research projects involving the TV include:

1. **Tricuspid Regurgitation: Deciding when to Repair:** As surgeons, we are often faced with the decision to repair a tricuspid valve or leave the regurgitation alone. Only a small amount of literature exists on outcomes after surgical repair and no report addresses outcomes for those patients with tricuspid regurgitation that was left untreated. The purpose of this investigation is to evaluate outcomes for patients with moderate or greater (> 2+) tricuspid regurgitation who did not undergo TV repair versus those that do. The student's role in this project will be to gather patient data to evaluate the effect on survival of patients with tricuspid regurgitation undergoing repair versus similar patients who did not receive a repair.
2. Often among clinicians, a tricuspid valve repair is viewed as a relatively benign procedure that can be performed off cross-clamp on a beating heart. However, historically patient outcomes after TV repair are comparable to some of the highest risk surgeries performed. The goal of this project is to identify demographic and clinical patient characteristics that affect morbidity and mortality after tricuspid intervention in order to determine which patients will benefit from TV intervention. The student's role in this project will be to collect and review patient data while collaborating with the CTU biostatistician to quantify the independent associations between each of the explanatory variables.

- **Current Biosketch-** see attached

- **Trainees over the past 5 years** (undergraduate, medical/graduate students; post-doctoral fellows)

Below, is the list of cardiac surgery fellows I have trained, as well as medical students who I have trained/mentored in research:

Cardiac Surgery Fellows

- Gyu Gang, MD
- Daren Danielson, MD
- Hyde Russell, MD
- Jacques Kpodonu, MD

- Masami Takagaki, MD
- James Scharff, MD
- Anastasios Polimenakos, MD
- Nori Matsutani, MD
- Vinak Tak, MD
- Barry Crowe, MD

Medical students:

- Andrew Kott
- Joseph Hanna
- Lorraine Levers
- Raj Bhlodia
- Tarun Bajaj

If you have any questions regarding our research program or active projects please contact me at 695-4867 (ricklee@nmh.org) or the CTU Research Manager, Anna Huskin, RN at 695-4067 (ahuskin@nmh.org).

Sincerely,

A handwritten signature in black ink, consisting of a large, stylized 'R' followed by a long horizontal line extending to the right.

Richard Lee, MBA, MD

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Richard Lee, MD, MBA		POSITION TITLE Assistant Professor of Surgery Surgical Director of Atrial Fibrillation	
eRA COMMONS USER NAME			
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
University of Illinois College of Medicine at Chicago	MD	1993	
John M. Olin School of Business, Washington University	MBA	1997	

A. Positions and Honors**Positions and Employment**

2007 to Present	Assistant Professor of Surgery Surgical Director of the Center of Atrial Fibrillation Northwestern University, Feinberg School of Medicine
2006 to Present	Pre-professional/Health Studies Liaison Saint Louis University Medical School
2004 to Present	Associate Program Director Cardiothoracic Residency Program Department of Surgery, Division of Cardiothoracic Surgery
2004 to Present	Director of Coronary Artery Bypass Outcomes Program
2003 to Present	Assistant Professor of Surgery Cardiothoracic Surgery Division
2003 to Present	Surgical Director of Cardiac Transplantation
2002 to 2003	Fellowship, Adult Cardiac Surgery Cleveland Clinic Foundation
2000 to 2002	Residency, Cardiothoracic Surgery Washington University
1997 to 2000	PGY 3-5 Residency, Department of Surgery Rush University
1995 to 1997	Research Fellowship, Cardiothoracic Surgery Washington University
1993 to 1995	PGY 1-2 Residency, Department of Surgery Medical College of Wisconsin, Froedtert Hospital

Professional Society Memberships

2005	Society for Thoracic Surgeons
2004 to Present	Southern Thoracic Surgical Association (STSA)
2003 to Present	American College of Cardiology (Fellow)
2003 to Present	International Society for Heart and Lung Transplantation
1999 to 2003	Thoracic Surgery Residents Association (President, 2002 to 2003)

1994 to Present
1992 to 2005

American College of Surgeons (Fellow, 2005)
American Medical Association

Honors

2005 St. Louis Business Journal. 40 Under 40 Award

B. Selected peer-reviewed publications (in chronological order)

1. Lee R, Nitta T, Schuessler RB, Schmidt RA, Harris KM, and Gay W A Jr. Retrograde infusion of lidocaine or L-arginine prior to reperfusion reduces myocardial infarct size. *Ann Thoracic Surg* 1998; 65: 1353-1359.
2. Lee R, Boasquevisque CHR, Boglione MM, Hiratsuka M, Scheule RK, Cooper JD, and Patterson GA. Isolated lung liposome-mediated gene transfer produces organ specific transgenic expression. *Ann Thoracic Surg* 1998; 66: 903-907.
3. Nitta T, Lee R, Schuessler RB, Boineau JP, and Cox JL. Radial approach: a new concept in surgery for atrial fibrillation. 2. Electrophysiological effects and atrial contribution to ventricular filling. *Ann Thoracic Surg* 1999; 67:36-50.
4. Nitta T, Lee R, Schuessler RB, Boineau JP and Cox JL. Radial approach: a new concept in surgery for atrial fibrillation. 1. Concept, anatomical and physiologic basis and development of procedure. *Ann Thoracic Surg* 1999; 67: 27-35.
5. Lee R, Nitta T, Schuessler RB, Johnson D, Boineau JP, and Cox JL. The closed heart MAZE: a non-bypass surgical technique. *Ann Thoracic Surg* 1999; 67: 1696-1702.
6. Nitta T, Mitsuno M, Rokkas CK, Lee R, Schuessler R-B and Boineau JP. Cryoablation of ventricular tachycardia guided by return cycle mapping after entrainment. *J Thoracic Cardiovasc Surg* 2001; 121:249-258.
7. Lee R, Fischer KC and Moon MR. Reoperative transmyocardial laser revascularization for late recurrent angina. *Ann Thoracic Surg* 2002; 73(2): 650-652.
8. Lee R, Meyers BF, Sundt TM, Trulock EP and Patterson GA. Concomitant coronary artery revascularization allows successful lung transplantation in good candidates with coronary disease. *J Thoracic Cardiovasc Surg* 2002; 124: 1250-1251
9. Lee R, Brown RN, Moazami N, Young J, Clemson B, Hill J, Czerska B, O'Donnell J, Kasper E, Kirklin JK, The Cardiac Transplant Research Database (CTRD), Rejection with hemodynamic compromise: a dismal prognosis. *J of Heart and Lung Trans* 2003; 22(1): S91-S91.
10. Lee R, Sundt TM III, Zhang Y, Schuessler RB, Moon MR, Pasque MK, Barner HB, Damiano RA and Gay W A Jr. Mitral valve repair in the elderly: operative risk for patients over 70 years of age is acceptable. *J Cardiovasc Surg* 2003; 44: 157-161.
11. Goldstein JA, Casserly IP, Balzer DT, Lee R and Lasala JM. Transcatheter closure of recurrent post-myocardial infarction ventricular septal defects utilizing the Amplatzer postinfarction VSD device. *Cathet Cardiovasc Intervent* 2003; 59: 238-243.
12. Lee R. Help wanted. *Ann Thorac Surg* 2003; 76: 1779-81.
13. Lee R and Moon MR. Homograft repair for recurrent prosthetic valve endocarditis. *J Thoracic Cardiovasc Surg* 2003; 125: 725-727.
14. Lee R, Mendeloff EN, Huddleston C, Sweet SC and De La Morena M. Bilateral lung transplantation for pulmonary hypoplasia due to congenital diaphragmatic hernia. *J Thoracic Cardiovasc Surg* 2003; 126: 295-297.
15. Walts PA, Lee R, Gillinov AM. Balloon occlusion of calcified aortic aneurysm with aortic insufficiency. *J Cardiac Surgery* 2004; 19: 279-280.
16. Lim MJ, Forsberg MJ, Lee R, Kern MJ. Hemodynamic abnormalities across an anomalous left main coronary artery assessment: Evidence for a dynamic ostial obstruction. *Cathet & Cardiovasc Interv* 2004; 63: 294-298.
17. Salazar JD, Lee R, Wheatley III GH, Doty JR. Are there enough jobs in cardiothoracic surgery? - the thoracic surgery residents association job placement survey for finishing residents. *Ann Thorac Surg* 2004; 78: 1523-1527.

18. Lee R, Hoercher KJ, McCarthy PM. Ventricular reconstruction surgery for congestive heart failure. *Cardiology* 2004; 101: 61-71.
19. Kolli S, Ziaee A, Lee R, Lim M, Levy B, Labovitz A. Myofibroblastic sarcoma of mitral valve: A case report. *J Am Soc Echocardiogr.* 2005 Mar;18(3):285-6.
20. Battafarano R, Lee R, Patterson GA, Sundt T, Gutierrez F, Dehdashti F, Ritter J, Govindan R, Bradley J. Clinical-pathologic conference in general thoracic surgery: Cardiac lymphoma. *J Thorac Cardiovasc Surg*: 2005 130: 870-874.
21. Wheatley GH, Lee R. Where have all the cardiothoracic surgery residents gone? Placement of graduating residents by United States thoracic surgery training programs, 1998 to 2002. *Heart Surg Forum* 2006;9(3):E618-22.
22. Lee R, Matsutani N, Polimenakos AC, Levers LC, Lee M, Johnson RG. Preoperative Noncontrast Chest Computed Tomography Identifies Potential Aortic Emboli. *Ann. Thorac. Surg.*, July 2007; 84: 38 - 42.

C. Research Support

Ongoing Research Support:

Lee, R (PI) 2007 -
 Medtronic, Inc.
 The Medtronic Concomitant Utilization of Radio Frequency Energy for Atrial Fibrillation (CURE-AF/Permanent) Study.
 Role: Principal Investigator

Lee, R (PI) 2007 -
 Medtronic, Inc.
 The Medtronic Concomitant Utilization of Radio Frequency Energy for Atrial Fibrillation (CURE-AF/Persistent) Study.
 Role: Principal Investigator

McGee, E (PI) 2007 -
 Myocor®, Inc.
 Randomized Evaluation of a Surgical Treatment for Off-pump Repair of the Mitral Valve (RESTOR-MV).
 Role: Co-Investigator

McGee, E (PI) 2007 -
 Ventracor, Inc.
 Evaluation of the VentrAssist™ Left Ventricular Assist Device as a Bridge to Cardiac Transplantation.
 Role: Co-Investigator

Cotts, W (PI) 2007 -
 Ventracor, Inc.
 Evaluation of the VentrAssist™ Left Ventricular Assist Device for the Treatment of Advanced Heart Failure – *Destination Therapy*.
 Role: Co-Investigator

McCarthy, PM (PI) 2007 -
 Edwards Lifesciences
 The PARTNER (US) Trial: Placement of AoRtic TraNscathetER Valves Trial.
 Role: Co-Investigator

Completed Research Support:

- Lee, R (PI) 2006 - 2007
Medtronic International, Inc.
A Randomized, Double-blind, Placebo-controlled, Multi-center Study to Evaluate the Cardioprotective Effects of MC-1 in Patients Undergoing High-risk Coronary Artery Bypass Graft (CABG) Surgery. MEND CABG Phase III Trial.
Role: Principal Investigator
- Schiller, L (PI) 2006 - 2007
Medtronic, Inc.
The Study of One Lead Defibrillation Efficacy SOLO.
Role: Co-Investigator
- Comunale, ME (PI) 2004 - 2007
Proctor & Gamble Pharmaceuticals, Inc., and Alexion Pharmaceuticals, Inc.
A Multi-center, Randomized, Double-Blind, Parallel-Group, Placebo-Controlled Study of 2 mg/kg Bolus Plus 24-hour 0.05 mg/kg/hr Infusion of Pexelizumab in Patients Undergoing Coronary Artery Bypass Grafting with Cardiopulmonary Bypass (PRIMO-CABG II).
Role: Co-Investigator
- Comunale, ME (PI) 2004 - 2007
AVANT Immunotherapeutics, Inc.
A Phase 2, Randomized, Double-Blind, Placebo-Controlled Study of the Safety and Efficacy of Human Recombinant Soluble Complement Receptor Type 1 (TP 10) in Adult Women Undergoing Cardiopulmonary Bypass Surgery.
Role: Co-Investigator
- Hauptman, P (PI) 2002 - 2007
Acorn Cardiovascular, Inc.
Continued Access Protocol of Acorn Cardiac Support and Device Therapy on Patients with Dilated Cardiomyopathy.
Role: Co-Investigator
- Lee, R (PI) 2004 - 2006
Scios, Inc.
A Pilot Multi-center Randomized, Double-Blind, Placebo-Controlled Study to Evaluate Nesiritide Infusion, Initiated Post Induction of Anesthesia, in the Management of Coronary Artery Bypass Graft (CABG) Patients Requiring Cardiopulmonary Bypass (CPB).
Role: Principal Investigator