

NAME: Liam Patrick Ryan, MD

DATE & PLACE OF BIRTH: 07/26/76
Grosse Pointe, MI

EDUCATION:

Date	Discipline	Degree	Institution
08/22/98-05/22/02	Medicine	MD	Columbia University
08/30/94-05/17/98	Chemistry	BA with High Distinction	University of Virginia
08/30/94-05/17/98	Physics	BA	University of Virginia

RESEARCH AND PROFESSIONAL TRAINING:

Research Fellowships:

Date	Field of Research	Site	Title
07/01/05-06/30/07	Cardiac Surgery	University of Pennsylvania	Academic Fellow
05/22/03-08/30/03	Cardiac Surgery	Columbia University	NIH summer research fellow
05/22/01-08/30/01	Organic Chemistry	University of Texas (SW)	NIH undergraduate research fellow
05/22/00-08/30/00	Organic Chemistry	University of Virginia	NSF undergraduate research fellow

Internships, Residencies and Clinical Fellowships:

Dates	Title	Specialty	Hospital
07/01/11-06/30/12	Fellow	Aortic Surgery	Hospital of the University of Pennsylvania
07/01/09-06/30/11	Resident	Cardiothoracic Surgery	Hospital of the University of Pennsylvania
07/01/03-06/30/09	Resident	General Surgery	Massachusetts General Hospital
07/01/02-06/30/03	Intern	General Surgery	Massachusetts General Hospital

PROFESSIONAL LICENSURE AND CERTIFICATION:

Date	Type of License or Certification
01/13/14-current	Commonwealth of Virginia License #0101255513
06/08/12-current	American Board of Thoracic Surgery #7886
11/16/09-current	American Board of Surgery #54730
06/19/12-current	North Carolina Medical License #182547
09/27/05-12/31/12	Medical Physician and Surgeon, Pennsylvania License #MD427672
07/01/02-06/30/09	Limited License Massachusetts Board or Registration in Medicine #214641

ACADEMIC APPOINTMENTS:

Dates	Title	Department	Institution
03/15/14-Current	Cardiovascular Surgery	Cardiac, Vascular & Thoracic Surgery Associates, P.C	
06/15/13-03/12/14	Assistant Professor	Surgery	University of North Carolina
07/01/09-06/30/12	Instructor	Surgery	University of Pennsylvania School of Medicine
07/01/07-06/30/09	Clinical Fellow	Surgery	Harvard Medical School
07/01/05-06/30/07	Academic Fellow	Surgery	Harvard Medical School

07/01/05-06/30/06	C. E. Welch Fellow	Surgery	Massachusetts General Hospital
07/01/05-06/30/07	Academic Fellow	Surgery	University of Pennsylvania School of Medicine
07/01/02-06/30/05	Clinical Fellow	Surgery	Harvard Medical School
08/22/97-05/22/98	Teaching Assistant	Physics	University of Virginia

CLINICAL APPOINTMENTS:

Dates	Title	Hospital
08/06/12-03/12/14	Director of Complex Aortic Surgery	Carolinas Medical Center
08/06/12-03/12/14	Co-Director Thoracic Aortic Center	Carolinas Medical Center
07/01/11-06/30/12	Fellow in Aortic Surgery	Hospital of the University of Pennsylvania
07/01/09-06/30/11	Resident in Cardiothoracic Surgery	Hospital of the University of Pennsylvania
07/01/02-06/30/09	Resident in General Surgery	Massachusetts General Hospital
12/15/05-06/30/07	Fellow in Trauma Surgery	Children's Hospital of Philadelphia

ACADEMIC HONORS AND DISTINCTIONS:

Allen O. Whipple Award	Columbia University	05/22/02
Alpha Omega Alpha	Columbia University	05/22/02
Phi Beta Kappa	University of Virginia	04/19/98
Alpha Chi Sigma Award	University of Virginia	05/17/98
Sigma Pi Sigma	University of Virginia	05/17/98
High Distinction in Chemistry	University of Virginia	05/17/98

PROFESSIONAL MEMBERSHIPS:

Society of Thoracic Surgeons
 American College of Surgeons
 American Heart Association
 Heart Failure Society of America
 International Society for Heart Research

RESEARCH SUPPORT:

American Heart Association Postdoctoral Fellowship 0625455U.
 Claude E. Welch Fellowship, Massachusetts General Hospital.

INTELLECTUAL PROPERTY:

Gorman RC, Gorman JH 3rd, Ryan LP - Prevention of infarct expansion: 12/679,147
 Bridges CR, Ryan LP – TAVALIGN System: provisional filing
 Madjarov J, Ryan LP – Smart Cannula System: provisional filing

PEER REVIEWED PUBLICATIONS:

Vallabhajosyula P, Szeto WY, Komlo CM, **Ryan LP**, Wallen TJ, Gorman RC, Bavaria JE. Geometric orientation of the aortic neoroot in patients with raphed bicuspid aortic valve disease undergoing primary cusp repair and a root reimplantation procedure. European Journal of Cardiothoracic Surgery 2013;7;156-160.

Levack MM, **Ryan LP**, Nathan DP, Jassar AS, Cheung AT, Weiss SJ, Gorman JH 3rd, Gorman RC, Jackson BM. Age related decrease in ascending aortic strain using a novel application of speckle-tracking algorithms. *Circulation* 2013 (In Press).

Levack MM, Bavaria JE, Gorman RC, Gorman JH III, **Ryan LP**. Rapid debranching using the Gore hybrid graft. *Annals of Thoracic Surgery* 2013; 95:163-165

Opotowsky AR, Perlstein T, Landzberg MJ, Colan SD, O’Gara PT, Body SC, **Ryan LP**, Arkani S, Sing MN. A shifting approach to the management of the aorta in bicuspid aortic valve. *Journal of Thoracic and Cardiovascular Surgery* 2012;12:1333-5

Dixon JA, Gorman RC, Stroud RE, Mukherjee R, Meyer EC, Baker NL, Morita M, Hamamoto H, **Ryan LP**, Gorman JH, Spinale FG. Targeted regional injection of biocomposite microspheres alters post-myocardial infarction remodeling and matrix proteolytic pathways. *Circulation* 2011;124:S35-45.

Morita M, Eckert CE, Matsuzaki K, Noma M, **Ryan LP**, Burdick JA, Jackson BM, Gorman JH 3rd, Sacks MS, Gorman RC. Modification of infarct material properties limits adverse ventricular remodeling. *Annals of Thoracic Surgery* 2011;92:617-624.

Vergnat M, Jassar AS, Jackson BM, **Ryan LP**, Eperjesi TM, Pouch AM, Weiss SJ, Cheung AT, Acker MA, Gorman JH 3rd, Gorman RC. Ischemic mitral regurgitation: a quantitative three-dimensional echocardiographic analysis. *Annals of Thoracic Surgery* 2011;91:157-164.

Ryan LP, Montenegro LM, Bird GL, Gruber PJ. Successful support and separation from veno-venous extracorporeal membrane oxygenation support in a three-month-old patient following bidirectional Glenn procedure. *Interactive Cardiovascular and Thoracic Surgery* 2010;11:496-498.

Hamamoto H, Gorman JH 3rd, **Ryan LP**, Hinmon R, Martens TP, Schuster MD, Plappert T, Kiupel M, St. John-Sutton MG, Itescu S, Gorman RC. Allogenic mesenchymal precursor cell therapy to limit remodeling after myocardial infarction: the effect of cell dosage. *Annals of Thoracic Surgery* 2009;87:794-801.

Ryan LP, Matsuzaki K, Noma M, Jackson BM, Eperjesi TJ, Plappert TJ, St. John-Sutton MG, Gorman JH 3rd, Gorman RC. Dermal filler injection: a novel approach for limiting infarct expansion. *Annals of Thoracic Surgery* 2009;87:148-155.

Ryan LP, Jackson BM, Eperjesi TJ, Plappert TJ, St John-Sutton M, Gorman RC, Gorman JH 3rd. A methodology for assessing human mitral leaflet curvature using real-time three-dimensional echocardiography. *Journal of Thoracic and Cardiovascular Surgery* 2008;136:726-734.

Ryan LP, Jackson BM, Hamamoto H, Eperjesi TJ, Plappert TJ, St John-Sutton M, Gorman RC, Gorman JH 3rd. The influence of annuloplasty ring geometry on mitral leaflet curvature. *Annals of Thoracic Surgery* 2009;86:749-760.

Ryan LP, Jackson BM, Eperjesi TJ, Plappert TJ, St John-Sutton M, Gorman RC, Gorman JH 3rd. Quantitative description of mitral valve geometry using real-time three-dimensional echocardiography. *Innovations: Technology and Techniques in Cardiothoracic and Vascular Surgery* 2007;2:237-244.

Blom AS, Pilla JJ, Arkles MS, Dougherty L, **Ryan LP**, Gorman JH 3rd, Acker MA, Gorman RC. Ventricular restraint prevents infarct expansion and improves borderzone function after MI: A study using MRI 3D surface modeling and myocardial tagging. *Annals of Thoracic Surgery* 2007;84:2004-2010.

Sakamoto H, Parish LM, Hamamoto H, **Ryan LP**, Eperjesi TJ, Plappert TJ, Jackson BM, St. John-Sutton MG, Gorman JH 3rd, Gorman RC. The effect of reperfusion on left ventricular regional remodeling strains after myocardial infarction. *Annals of Thoracic Surgery* 2007;84:1528-1536.

Ryan LP, Jackson BM, Parish LM, Sakamoto H, Plappert TJ, St John-Sutton M, Gorman JH 3rd, Gorman RC. Mitral valve tenting index for assessment of subvalvular remodeling. *Annals of Thoracic Surgery* 2007;84:1243-1249.

Ryan LP, Jackson BM, Enomoto Y, Parish LM, Plappert TJ, St John-Sutton M, Gorman RC, Gorman JH 3rd. Description of regional mitral annular nonplanarity in healthy human subjects: a novel methodology. *Journal of Thoracic and Cardiovascular Surgery* 2007;134:644-648.

Ryan LP, Jackson BM, Enomoto Y, Parish LM, Plappert TJ, St. John-Sutton, MG, Gorman RG, Gorman JH. Quantification and localization of mitral valve tenting in ischemic mitral regurgitation using real-time three-dimensional echocardiography. *European Journal of Cardiothoracic Surgery* 2007;31:839-843.

Ryan LP, Jackson BM, Parish LM, Plappert TJ, St John-Sutton M, Gorman JH 3rd, Gorman RC. Regional and global patterns of annular remodeling in ischemic mitral regurgitation. *Annals of Thoracic Surgery* 2007;84:553-559.

Duma SM, Stitzel JD, Crandall JR, **Ryan LP**. Determination of bone mineral content in cadaveric test specimens. *Journal of the Southern Orthopedic Association* 2002;11;80-87.

INVITED PUBLICATIONS:

Ryan LP, Opotowski RA, Gorman JH 3rd, Gorman RC. Management of mitral regurgitation in the elderly patient. *Aging Health* 2007;3:637-646.

Gorman JH, **Ryan LP**, Gorman RC. Pathophysiology of ischemic mitral insufficiency: Does repair make a difference? *Journal of Heart Failure Reviews* 2006;11:219-229

Ryan LP, Salgo IS, Gorman RC, Gorman JH 3rd. The emerging role of three-dimensional echocardiography in mitral valve repair. *Seminars in Thoracic and Cardiovascular Surgery* 2006;18:126-134

ORAL ABSTRACT PRESENTATIONS:

Quantitative Three-Dimensional Analysis of Bicuspid Aortic Valves: A Single Modality Approach for Characterization of Valvular and Proximal Aortic Pathology. Levack MM, Jassar AS, **Ryan LP**, Jackson BM, Keane MG, St. John-Sutton MG, Gorman III JH, Gorman RC. 4th Annual Joint Scientific Session of the Heart Valve Society of America and Society for Heart Valve Disease, April 2012, New York, NY.

Three-Dimensional Echocardiography as a Predictive Instrument for Repairability of Regurgitant Bileaflet Aortic Valves. Levack MM, Eperjesi TJ, Weiss SJ, Gorman III JH, Bavaria JE, Gorman RC, **Ryan LP**. AATS Aortic Symposium, April 2012, San Francisco, CA.

Quantitative Three-Dimensional Analysis of Bicuspid Aortic Valves: A Single Modality Approach for Characterization of Valvular and Proximal Aortic Pathology. Levack MM, Jassar AS, **Ryan LP**, Jackson BM, Keane MG, St. John-Sutton MG, Gorman III JH, Gorman RC. American College of Surgeons, Surgical Forum, September 2012, Chicago IL

Saddle ring annuloplasty dramatically increases mitral leaflet curvature. **Ryan LP**, Jackson BM, Hamamoto H, Eperjesi TJ, Plappert TJ, St. John-Sutton MG, Gorman RC, Gorman JH 3rd. Society of Thoracic Surgeons 44th Annual Meeting, Ft. Lauderdale, Florida, January, 2008.

Dermal filler injection: A novel approach for limiting early infarct expansion. **Ryan LP**, Matsuzaki K, Noma M, Plappert TJ, St. John-Sutton MG, Gorman JH 3rd, Gorman RC. American Heart Association Scientific Sessions 2007, Orlando, Florida, November, 2007.

Early ventricular restraint after MI: cautionary results. Hamamoto H, **Ryan LP**, Parish LM, Plappert TJ, St. John-Sutton MG, Gorman JH 3rd, Gorman RC. American College of Surgeons 93rd Annual Clinical Congress, New Orleans, Louisiana, October, 2007.

Intramyocardial left ventricular restraint: A new surgical treatment for acute myocardial infarction. **Ryan LP**, Matsuzaki K, Jackson BM, Noma M, Eperjesi TJ, Plappert TJ, St. John-Sutton MG, Gorman JH 3rd, Gorman RC. 21st EACTS Annual Meeting, Geneva, Switzerland, September, 2007.

Quantitative description of mitral valve geometry in vivo. **Ryan LP**, Jackson BM, Hamamoto H, Eperjesi TJ, Plappert TJ, St. John-Sutton MG, Gorman RC, Gorman JH 3rd. The Society for Heart Valve Disease 4th Biannual Meeting, New York, New York, June, 2007.

Quantitative description of mitral valve geometry by means of real-time three-dimensional echocardiography: Applicability to minimally invasive interventions. **Ryan LP**, Jackson BM, Plappert TJ, St. John-Sutton MG, Gorman RC, Gorman JH 3rd. International Society for Minimally Invasive Cardiothoracic Surgery Annual Scientific Meeting 2007, Rome, Italy, June 2007.

Progressive loss of mitral annular saddle shape as chronic ischemic mitral regurgitation develops. **Ryan LP**, Jackson BM, Enomoto Y, Parish LM, Plappert TJ, St. John-Sutton, MG, Gorman RG, Gorman JH. American Heart Association Scientific Sessions 2006, Chicago, Ill, November, 2006.

Why the mid-posterior mitral leaflet is predisposed to flail in cases of myxomatous degeneration. **Ryan LP**, Jackson BM, Parish LM, St. John-Sutton MG, Gorman RC, Gorman JH. American College of Surgeons 92nd Annual Clinical Congress, Chicago, Illinois, October, 2006.

Mitral valve tenting asymmetry following posterior MI: A real-time three-dimensional echocardiographic study. **Ryan LP**, Jackson BM, Parish LM, Plappert TJ, St. John-Sutton MG, Gorman JH, Gorman RC. 5th EACTS/ESTS Joint Meeting, Stockholm, Sweden, September, 2006.

Evaluation of mitral valve geometry using real-time 3D echocardiography. **Ryan LP**, Jackson BM, Parish LM, St. John-Sutton MG, Plappert TJ, Gorman RC, Gorman JH. 10th Annual Hilton Head Workshop and 2nd Biennial Heart Valve Meeting - Engineering and Innovative Technologies for the Treatment of Heart Valve Disease. Hilton Head Island, SC, March, 2006.