

## CURRICULUM VITAE

### Part I: General Information

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### Education

August 2005-May 2009 University of Michigan-Ann Arbor, Ann Arbor, MI  
Bachelor of Science, Biochemistry

August 2009-May 2014 University of Kansas School of Medicine, Kansas City, KS  
Doctor of Medicine

July 2012-May 2013 University of Kansas School of Medicine, Kansas City, KS  
Master of Science in Clinical/Translational Research with Honors

August 2018-May 2019 University of Pittsburg, Swanson School of Engineering, Pittsburgh, PA  
Graduate Certificate in Medical Product Innovation

### Postgraduate Training

June 2014-2022 Resident, Cardiothoracic Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA

July 2017-2019 Fellowship, Cardiovascular Engineering, University of Pittsburgh/McGowan Institute for Regenerative Medicine, Pittsburgh, PA

July 2022-2023 Fellowship, Congenital Cardiothoracic Surgery, Children's Hospital of Philadelphia, University of Pennsylvania, Philadelphia, PA

**Licensure** State of Pennsylvania (Certificate #MT206776 exp. 10/31/23)  
State of Tennessee (Certificate #69655, exp. 9/30/2026)

**Certification** Thoracic and Cardiac Surgery - The American Board of Thoracic Surgery (Certificate #8982)  
Congenital Cardiac Surgery – The American Board of Thoracic Surgery (Certificate #273)

### **Academic Appointments**

December 2023-Present Assistant Professor of Cardiac Surgery  
Vanderbilt University Medical Center, Nashville, TN

March 2024-Present Assistant Professor of Biomedical Engineering  
Vanderbilt University, Nashville, TN

### **Hospital Appointments**

December 2023-Present Congenital Cardiothoracic Surgeon, Monroe Carell Jr. Children's Hospital, Vanderbilt University Medical Center, Nashville, TN

### **Employment**

September 2020-Present Co-Founder, Chief Medical Officer (2020-2023), Vice President of Strategy and Innovation (2024-Present), Board of Directors, Neolife Inc.

February 2022-Present Co-Founder, Chief Medical Officer, Board of Directors, Respair Inc.

July 2023-October 2023    Advanced Congenital Cardiac Surgery/Heart Failure Fellow, Children's Hospital of Philadelphia, University of Pennsylvania, Philadelphia, PA

December 2023-Present    Congenital Cardiothoracic Surgeon, Monroe Carell Jr. Children's Hospital, Vanderbilt University Medical Center, Nashville, TN

### **Institutional Service & Leadership**

January 2020- June 2022            Cardiac Surgery Opioid Use Reduction Quality Improvement Initiative, Project Leader, University of Pittsburgh Medical Center, Pittsburgh, PA

January 2021-June 2022    Cardiac Surgery Hand-Off Quality Improvement Initiative, committee member, University of Pittsburgh Medical Center, Pittsburgh, PA

December 2023-Present    Pediatric Heart Institute Quality Council, member, Monroe Carell Jr. Children's Hospital, Vanderbilt University Medical Center, Nashville, TN

January 2024-Present    Pediatric Heart Institute Blood Management Quality Improvement Committee, member, Monroe Carell Jr. Children's Hospital, Vanderbilt University Medical Center, Nashville, TN

January 2025-Present    Institutional Anticoagulation Review Committee, Member, Vanderbilt University Medical Center, Nashville, TN

### **Professional Organizations**

2010-2019	American College of Surgeons
2013-Present	Society of Thoracic Surgeons
2014-2024	Thoracic Surgery Residents Association
2017-Present	American Heart Association
2024-Present	International Society for Heart and Lung Transplantation

### **Professional Activities**

2018-2024	Thoracic Surgery Resident's Association Executive Committee <ul style="list-style-type: none"><li>• 2018-2020 – Podcast Section Editor</li></ul>
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- 2020-2021 – Newsletter Editorial Staff, Featured Podcasts and Educational Sections
- 2020-2021 – Projects Committee Chair
- 2021-2022 – Secretary
- 2022-2023 – President
- 2023-2024 – Past President

2020-Present            The Society of Thoracic Surgeons

- 2020-2024 – Workforce on Thoracic Surgery Resident Issues, member
- 2025-present – Taskforce on Trainee and Resident Development, member
- 2025-present – Workforce on Congenital Heart Surgery Database, member

2021-2024            The American Association for Thoracic Surgery

- 2021-2023 – Congenital Education Committee, member

### **Awards & Honors**

2011            Outstanding Research Poster (1<sup>st</sup> place award), Student Research Forum, University of Kansas

2013            1<sup>st</sup> Place Basic Science Oral Research Presentation, Student Research Forum, University of Kansas

2013            Haden Medal for Top Medical Student Research, Student Research Forum, University of Kansas

2013            Research Travel Award, Translational Sciences Meeting, Washington D.C.

2013            Telluride Patient Safety Roundtable Travel Award, The Doctor's Company Foundation

2014            Thomas Orr, MD Award (Outstanding Student in Surgery) University of Kansas

2016            American Association for Thoracic Surgery Critical Care Scholarship

2018            Lillehei Resident Research Award Finalist: American Association of Thoracic Surgeons Clinical Congress April 2018, travel award

2018            2<sup>nd</sup> place, Department of Cardiothoracic Surgery Annual Poster Competition, University of Pittsburgh Medical Center

2018            Best Scientific Presentation: Bridgeside Research Forum, Pittsburgh, PA (\$350 award)

2019            Cardiothoracic Surgery Ethics Forum Scholarship, AATS/STS, (\$10,000 award)

2019            1<sup>st</sup> Place Research Presentation, Fellows Research Day, American Heart Association, Pittsburgh Chapter

- 2019 2<sup>nd</sup> Place, Randall Family Big Idea Business Competition (OneValve engineered heart valve start-up) \$15,000 start-up award, University of Pittsburgh
- 2019 Resident Academic Leadership Award, Department of Cardiothoracic Surgery, University of Pittsburgh
- 2019-2020 Center for Medical Innovation (University of Pittsburgh) start-up award; ET3; an endotracheal tube for preventing and monitoring migration, \$25,000 ((co-PI)
- 2019-2021 Center for Medical Innovation (University of Pittsburgh) start-up award; Ex Vivo Heart Perfusion System, \$20,000 (co-PI)
- 2022 Center for Medical Innovation (University of Pittsburgh) start-up award: NextGenET: an Endotracheal Tube to Prevent VAP, \$20,000 (co-PI)

## **Part II: Research, Teaching, Clinical and Leadership Contributions**

### **Peer Reviews**

#### *AD HOC REVIEWER:*

1. The International Journal of Artificial Organs, 2018-present
2. Interactive Cardiovascular and Thoracic Surgery, 2019-present
3. International Journal of Surgery, 2020-present
4. Journal of Thoracic and Cardiovascular Surgery (JTCVS), 2024-present
5. Annals of Thoracic Surgery, 2025-present
6. European Journal of Cardiothoracic Surgery (EJCTS), 2026-present

#### *ABSTRACT REVIEWER:*

1. The Society of Biomaterials Annual Meeting, 2019. Cardiovascular Regeneration Section.

### **Grants**

#### *Active*

#### *Completed*

Development of a Biomimetic Stentless Pulmonary Heart Valve for the Treatment of Pediatric Congenital Heart Disease  
National Institutes of Health, Small Business Technology Transfer (STTR) Award  
(1R41HL167502-01A1)  
Role: Principal Investigator, Neolife Inc  
\$553,838

RelianceET: a novel endotracheal tube design with a superior sealing mechanism to improve clinical efficiency and reduce lung injury and infection for patients.

National Institutes of Health, Small Business Innovation in Research  
(SBIR) Award  
(1R43HL172367-01A1)  
Role: Co-Investigator, Respair Inc  
\$299,101

Neolife Self-Generating Heart Valve  
Pennsylvania Pediatric Medical Device Consortium  
2021-2022  
Role: Co-Principal Investigator  
\$100,000

NextGenET: an Endotracheal Tube to Prevent VAP  
Pittsburgh Innovation Challenge (PinCh)  
2021-2022  
Role: Co-Principal Investigator  
\$120,000

OneValve: A Self-Generating Heart Valve  
Pittsburgh Innovation Challenge (PinCh)  
2019-2021  
Role: Co-Principal Investigator  
\$100,000

Socioeconomic Factors Affecting ECMO Outcomes  
2019-2020  
Role: Co-Investigator  
ELSO Research Grant - \$5,000

Clinical and Translational Research Fellowship  
National Institute of Health, University of Kansas T-32 Award  
2012  
Role: Pre-Doctoral Fellow  
\$48,000

## Part III: Bibliography

### Publications

1. Khait L, Hecker L, Blan NR, **Coyan G**, Migneco F, Huang YC, Birla RK. Getting to the heart of tissue engineering. J Cardiovasc Transl Res. 2008 Mar;1(1):71-84. doi: 10.1007/s12265-007-9005-x. Epub 2008 Jan 29. PMID: 20559960

2. Migneco F, Huang YC, **Coyan GN**, Birla RK. New and simplified method for multiple left ventricle catheterizations in small animals. *Interact Cardiovasc Thorac Surg*. 2008 Oct;7(5):925-7. doi: 10.1510/icvts.2008.184119. Epub 2008 Jul 23. PMID: 18653500
3. Abicht T, Jones C, **Coyan G**, Stites S, Moncure M. A Technique for the Surgical Treatment of Distal Intestinal Obstructive Syndrome by Hand-Assisted Laparoscopy. *Surg Laparosc Endosc Percutan Tech*. 2012 Jun;22(3):e142-3. doi: 10.1097/SLE.0b013e318248b463. PMID: 22678336
4. **Coyan G**, Reeder K, Vacek J. Diet and Exercise Interventions Following Coronary Artery Bypass Graft Surgery: A Review and Call to Action. *Phys Sportsmed*. 2014 May;42(2):119-29. doi: 10.3810/psm.2014.05.2064. PMID: 24875979
5. **Coyan G**, Moncure M, Thomas J, Wood J. Induced Hypothermia During Resuscitation from Hemorrhagic Shock Attenuates Microvascular Inflammation in the Rat Mesenteric Microcirculation. *Shock*. 2014 Dec;42(6):518-24. doi: 10.1097/SHK.0000000000000241. PMID: 25046540
6. **Coyan G**, Daon E. Resection of supernumerary intrathoracic rib using robotic-assisted video-assisted thoracoscopic surgery. *Surg Radiol Anat*. 2016 May;38(4):415-7. doi: 10.1007/s00276-015-1574-9. Epub 2015 Oct 31. PMID: 26520667
7. Yang H, **Coyan G**, Vercauteren M, Reddy N, Luketich J, Sarkaria I. Robot-assisted En-bloc Anterior Mediastinal Mass Excision with Pericardium and Adjacent Lung for Locally Advanced Thymic Carcinoma. *J Vis Surg*. 2018 May 31;4:115. doi: 10.21037/jovs.2018.05.20. eCollection 2018. PMID: 29963404
8. **Coyan G**, Wei L, Althouse A, Roberts H, Schauble D, Murashita, T, Cook C, Rankin J, Badhwar V. Robotic Mitral Valve Operations by Experienced Surgeons are Cost-Neutral and Durable at 1 year. *J Thorac Cardiovasc Surg*. 2018 Sep;156(3):1040-1047. doi: 10.1016/j.jtcvs.2018.03.147. Epub 2018 Apr 12. PMID: 29724597
9. **Coyan G**, Gleason T, Chu D. Left Atrial Appendage Occlusion in Cardiac Surgery. *JAMA*. 2018 Oct 16;320(15):1602. doi: 10.1001/jama.2018.11332. PMID: 30326117
10. **Coyan G**, Sultan I, Gleason T, Navid F, Chu D, Sharbaugh M, Kilic A. Outcomes of Mitral Valve Surgery Concomitant with Aortic Valve Replacement. *J Card Surg*. 2018 Nov;33(11):706-715. doi: 10.1111/jocs.13824. Epub 2018 Oct 2. PMID: 30278475

11. **Coyan G**, D'Amore A, Matsumura Y, Pedersen D, Luketich S, Shanov V, Katz W, David T, Wagner W, Badhwar V. In Vivo Functional Assessment of a Novel Degradable Metal and Elastomeric Scaffold-Based Tissue Engineered Heart Valve. *J Thorac Cardiovasc Surg*. 2019 May;157(5):1809-1816. doi: 10.1016/j.jtcvs.2018.09.128. Epub 2018 Nov 22. PMID: 30578064
12. **Coyan G**, Emerel L, Sciortino C. Establishing an Academic Niche in Cardiothoracic Surgery: The Earlier the Better. *J Thorac Cardiovasc Surg*. 2019 Jun;157(6):2381-2384. doi: 10.1016/j.jtcvs.2018.11.040. Epub 2018 Nov 27. PMID: 30600081
13. **Coyan G**, Ekeke C, Chu D. Benefits of Incentive Spirometry: Still More Work to Do. *JAMA Surg*. 2019 Jul 1;154(7):588-589. doi: 10.1001/jamasurg.2019.0538. PMID: 30969330
14. Kagawa H, **Coyan G**, Davis K, Kilic A, Hickey G, Kormos R, Mathier M, Phillips D, Sciortino C. Severe Dizziness and Syncope After Heartmate 3 Implantation Requiring Pump Exchange. *Ann Thorac Surg*. 2019 Sep;108(3):e149-e151. doi:10.1016/j.athoracsur.2019.01.067. Epub 2019 Mar 7. PMID: 30853589
15. **Coyan G**, D'Angelo M, Kilic A, Gleason T, Aranda-Michel E, Okusanya O, Kinnunen A, Sultan I. Evaluation of a Simulation-Based Mini-Elective on Medical Student Interest in Cardiac Surgery. *J Card Surg*. 2019 Oct;34(10):901-907. doi: 10.1111/jocs.14143. Epub 2019 Jul 3. PMID: 31269293
16. **Coyan G**, Zinn M, West S, Sharma M. Heart Transplantation from Biventricular Support in Infant with Novel SMYD1 Mutation. *Pediatr Cardiol*. 2019 Dec;40(8):1745-1747. doi: 10.1007/s00246-019-02139-7. Epub 2019 Jul 5. PMID: 31278431
17. **Coyan G**, Sultan I. Reply from the authors: Commonalities in Perspective in Cardiothoracic Surgery Across the Pond. *J Thorac Cardiovasc Surg*. 2020 Feb;159(2):e132-e133. doi: 10.1016/j.jtcvs.2019.08.088. Epub 2019 Oct 17. PMID: 31630844
18. **Coyan G**, Kilic A, Gleason T, Shuchert M, Luketich J, Okusanya O, Sultan I. Medical Student Perceptions of a Career in Cardiothoracic Surgery: Results of an Institutional Survey. *J Thorac Cardiovasc Surg*. 2020 May;159(5):1906-1912. doi: 10.1016/j.jtcvs.2019.07.022. Epub 2019 Jul 25. PMID: 31471086

19. **Coyan G**, da Mota Silveira-Filho L, Matsumura Y, Luketich S, Katz W, Badhwar V, Wagner W, D'Amore A. Acute In Vivo Functional Assessment of a Biodegradable Stentless Elastomeric Tricuspid Valve. *J Cardiovasc Trans Res.* 2020 Oct;13(5):796-805. doi: 10.1007/s12265-020-09960-z. Epub 2020 Feb 10. PMID: 32040766
20. Kilcoyne M, Do-Nguyen C, Han J, **Coyan G**, Sultan I, Roberts M, Carpenter A. Clinical Exposure to Cardiothoracic Surgery for Medical Students and General Surgery Residents. *J Surg Educ.* 2020 Nov-Dec;77(6):1646-1653. doi: 10.1016/j.jsurg.2020.05.017. Epub 2020 Jun 7. PMID: 32522562
21. **Coyan G**, Aranda-Michel E, Kilic A, Luketich J, Okusanya O, Chu D, Morell V, Schuchert M, Sultan I. The Impact of COVID-19 on Thoracic Surgery Residency Programs in the US: A Program Director Survey. *J Card Surg.* 2020 Dec;35(12):3443-3448. doi: 10.1111/jocs.14954. Epub 2020 Aug 16. PMID: 32881042
22. **Coyan G**, Aranda-Michel E, Luketich J, Kilic A, Okusanya O, Schuchert M, Gleason T, Carey C, Kinnunen A, Sultan I. Thoracic Surgery In-Training Exam Predicts Written But Not Oral Board Pass Rates: A 15-Year Single-Center Analysis. *Semin Thorac Cardiovasc Surg.* 2021;33(1):121-127. doi: 10.1053/j.semtcvs.2020.06.007. Epub 2020 Jun 20. PMID: 32569649
23. **Coyan G**, Okoye A, Shah A, Wang Y, Thoma F, Sciortino C, Kilic A, Gleason T, Chu D. Effect of Neighborhood Socioeconomic Factors on Re-Admissions and Mortality Following CABG. *Ann Thorac Surg.* 2021 Feb;111(2):561-567. doi: 10.1016/j.athoracsur.2020.05.102. Epub 2020 Jul 16. PMID: 32682753
24. Silveira-Filho L, **Coyan G**, Adamo A, Luketich S, Menallo G, D'Amore A, Wagner W. Can a Biohybrid Patch Salvage Ventricular Function at a Late Time Point in the Post-Infarction Remodeling Process? *JACC Basic Transl Sci.* 2021 Mar 24;6(5):447-463. doi: 10.1016/j.jacbts.2021.01.004. eCollection 2021 May. PMID: 34095634
25. Kilcoyne M, **Coyan G**, Aranda-Michele E, Kilic A, Morell V, Sultan I. The Impact of Coronavirus 2019 on General Surgery Residency: A National Survey of Program Directors. *Ann Med Surg (Lond).* 2021 Apr 16;65:102285. doi: 10.1016/j.amsu.2021.102285. eCollection 2021 May. PMID: 33948166
26. **Coyan G**, Sultan I. Reply from authors: Increasing Medical Student Interest in Cardiothoracic Surgery: Exposure Matters. *J Thorac Cardiovasc Surg.* 2021

Apr;161(4):e318. doi: 10.1016/j.jtcvs.2020.06.061. Epub 2020 Jul 16. PMID: 32682586

27. Blitzer D, **Coyan G**. Resident Response to the 2019 Thoracic Surgery Practice and Access Task Force. *Ann Thorac Surg*. 2021 Apr;111(4):1405. doi: 10.1016/j.athoracsur.2020.06.041. Epub 2020 Aug 22. PMID: 32835751
28. **Coyan G**, Da Fonseca Da Silva L, Da Silva P, Viegas M, Morell V, Castro-Medina M. Polytetrafluoroethylene Tricuspid Valved Conduit for Right Ventricular Outflow Tract Reconstruction. *Ann Thorac Surg*. 2021 Jun;111(6):e455-e458. doi: 10.1016/j.athoracsur.2020.11.090. Epub 2021 Feb 22. PMID: 33631155
29. Brescia A, Lou X, Louis C, Blitzer D, **Coyan G**, Han J, Watson J, Mehaffey J; The Thoracic Surgery Residents Association: Past Contributions, Current Efforts, and Future Directions. *J Thorac Cardiovasc Surg*. 2021 Sep;162(3):917-927.e5. doi: 10.1016/j.jtcvs.2020.08.086. Epub 2020 Aug 31. PMID: 33051070
30. **Coyan G**, Pierce B, Rhinehart Z, Ruppert K, Katz W, Kilic A, Kormos R, Sciortino C. Impact of Pre-existing Mitral Regurgitation Following Left Ventricular Assist Device Implant. *Semin Thorac Cardiovasc Surg*. 2021 Winter;33(4):988-995. doi: 10.1053/j.semctvs.2020.12.007. Epub 2021 Jan 12. PMID: 33444766
31. **Coyan G**, Lu M, Ruppert K, Baker N, Levy R, Luketich J, Schuchert M, Sarkaria I. Activity Based Cost Analysis of Robotic Anatomic Lung Resection During Program Implementation. *Ann Thorac Surg*. 2022 Jan;113(1):244-249. doi: 10.1016/j.athoracsur.2021.01.053. Epub 2021 Feb 16. PMID: 33600792
32. **Coyan G**, Sultan I, Seese L, Chu D, Schuchert M, Kinnunen A, Kilic A. Implementation of a Protocol to Increase the Academic Productivity of Cardiothoracic Surgery Resident Physicians. *J Thorac Cardiovasc Surg*. February 2022; 163(2): 739-745.
33. Mehaffey JH, Blitzer D, **Coyan G**, Wilder FG, Lin Y, Han J, Luc JGY, Louis C, Brescia AA. Insights from the Thoracic Surgery Residents Association Early-Career Development Series. *JTCVS Open*. 2022 Feb 22;10:298-302. doi: 10.1016/j.xjon.2022.02.021. eCollection 2022 Jun. PMID: 36004214
34. **Coyan G**, Kilcoyne M, Aranda-Michel E, Serna-Gallegos D, Kilic A, Kinnunen A, Sultan I. A Cardiac Surgery Mini-Elective Increases Specialty Knowledge Acquisition Among Pre-Clinical Medical Students. *Heart Surg Forum*. 2022 Feb 8;25(1):E113-E117. doi: 10.1532/hsf.4215. PMID: 35238314

35. **Coyan G**, Anand N, Imran M, Gomez H, Ramanan R, Murray H, Sanon S, Yoon P, Kaczorowski D, Bonatti J. ECMO and Impella Support Strategies as a Bridge to Surgical Repair of Post-Infarction Ventricular Septal Rupture. *Medicina*. 2022 Apr 28;58(5):611. doi: 10.3390/medicina58050611. PMID: 35630028
36. **Coyan G**, Huckaby L, Diaz-Castrillon C, Miguelino A, Kilic A. Trends and Outcomes Following Total Artificial Heart as Bridge to Transplant from the UNOS Database. *J Card Surg*. 2022 May;37(5):1215-1221. doi: 10.1111/jocs.16329. Epub 2022 Feb 19. PMID: 35184312
37. Steurer M, Tonna J, **Coyan G**, Burki S, Sciortino C, Oishi P. On-hours Compared to Off-hours Pediatric Extracorporeal Life Support Initiation in the United States Between 2009 and 2018 – An Analysis of the Extracorporeal Life Support Organization Registry. *Crit Care Explor*. 2022 May 16;4(5):e0698. doi: 10.1097/CCE.0000000000000698. eCollection 2022 May. PMID: 35620766
38. Brescia A, Louis C, Luc J, **Coyan G**, Han J, Blitzer D, Wilder F, Bergquist C, Bloom J, Reddy R, Sandhu G, Mehaffey J. The Utilization and Impact of Educational Resources Published by the Thoracic Surgery Residents Association. *JTCVS Open*. May 13 2022; 11:241-264.
39. **Coyan G**, Chin H, Shah A, Miguelino A, Wang Y, Kilic A, Sultan I, Sciortino C, Chu D. Charlson Comorbidity Index is Associated with Longer-Term Mortality and Re-Admissions Following Coronary Artery Bypass Grafting. *J Surg Res*. 2022 Jul;275:300-307. doi: 10.1016/j.jss.2022.02.012. Epub 2022 Mar 18. PMID: 35313139
40. **Coyan G**, Diaz-Castrillon C, Castro-Medina M, Da Fonseca Da Silva L, Viegas M, Morell V. High Risk Status for Stage I Palliation Increases Mortality Following Stage II But Not Stage III. *Ann Thorac Surg*. 2022 Oct;114(4):1427-1433. doi: 10.1016/j.athoracsur.2021.06.081. Epub 2021 Aug 4. PMID: 34363794
41. Ekeke CN, **Coyan G**. Medical Product Innovation: A Primer for Early Career Cardiothoracic Surgeons. *Semin Thorac Cardiovasc Surg*. 2023;35(3):517-521. doi: 10.1053/j.semtcvs.2022.06.004. Epub 2022 Jun 10. PMID: 35697135
42. Wilder F, Han J, Cohen W, Louis C, Mehaffey J, Brescia A, Blitzer D, Luc J, **Coyan G**, Bloom J, Cevalco M, Kilic A. Cardiothoracic Surgery Training: An Honest and Anonymous Assessment of the Trainee Experience. *J Surg Res*. Jan 27, 2023; 6 (1): 13-21. doi: 10.26502/jsr.10020275

43. **Coyan G**, Kilcoyne M, Castro-Medina M, Viegas M, Da Fonseca Da Silva L, Romano J, Fuller S, Morell V. Congenital Heart Surgery Training Experiences and Perceptions Among Cardiothoracic Surgery Residents. *Semin Thorac Cardiovasc Surg.* 2023 Spring;35(1):148-155. doi: 10.1053/j.semtcvs.2022.03.004. Epub 2022 Mar 10. PMID: 35278667
44. **Coyan G**, Gillespie M, Ewing S, Maeda K. Successful Dilatation of a Novel Expandable Polytetrafluoroethylene Pulmonary Artery Band Negating Need for Further Surgery. *JTCVS Tech.* 2023 Sep 22; 22:258-260. Doi: 10.1016/j.xjtc.2023.08.029.
45. Harris T, Lecointe J, Doyle T, Do N, Janssen D, **Coyan G**. Management of Obstructed Complete Left Partial Anomalous Pulmonary Venous Return in a Preterm Infant. *Ann Thorac Surg Short Rep.* 2024 Sep 26; 3(1):106-108. Doi: 10.1016/j.atssr.2024.09.006. PMID: 40098845.
46. Yousef S, Sultan I, Thoma F, Wang Y, **Coyan G**, Sa M, Serna-Gallegos D, Ferdinand F, West D, Kaczorowski, Bonatti J, Chu D, Yoon P. The Impact of Epiaortic Ultrasound Utilization in Patients Undergoing Coronary Artery Bypass Grafting. *J Thorac Cardiovasc Surg.* 2024 Oct 26; S0022-5223(24)00983-8. Doi: 10.1016/j.jtcvs.2024.10.032. PMID: 39490961.
47. Boodagh P, Modica De Mohac L, Hayashi Y, Vella D, Ye S, Cosentino F, Fujii T, George E, **Coyan G**, Dario Laubrie Soto J, Burriesci G, Wagner W, D'Amore A. Photooxidation Cross-Linked, Glutaraldehyde Cross-Linked, or Enzyme and Hydrostatic Pressure Processed Decellularized Biomaterials for Cardiovascular Repair Do Not Affect Host Response in a Rat Right Ventricular Outflow Tract Reconstruction (RVOT) Model. *J Biomed Mater Res B Appl Biomater.* 2005 Feb; 113(2):e35529. DOI: 10.1002/jbm.b.35529. PMID: 39853946.
48. Marlowe M, Weiner J, Flack E, Mathis C, Christian K, **Coyan G**. Acute Rupture of a Sinus of Valsalva Aneurysm with Dehiscence of the Tricuspid Valve. *JTCVS Tech.* 2025 Mar 28; 31:115-117. DOI: 10.1016/j.xjtc.2025.03.014. PMID: 40641802.
49. Vella D, Boodagh P, De Mohac L, Ye S, Cosentino F, Scaglione F, Dei Bardi S, Polizzi G, **Coyan G**, Wagner W, Burriesci G, D'Amore A. In Vitro Evaluation of Biomaterials for Heart Valve Prosthesis: High Hydrostatic and Enzymatic Treatments as Alternative for Bio-Derived Materials. *J Biomed Mater Res B Appl Biomater.* 2025 Jun; 113(6):e35592. DOI: 10.1002/jbm.b.35592. PMID: 40474794.
50. Elsisy M, Ruth T, **Coyan G**, Dulek D, Parra D. In-hospital Outcomes of Pediatric Cardiac Surgery Admission for Acute Infective Endocarditis in Congenital Heart

Disease. *Pediatr Cardiol.* 2025 Sep 26. DOI: 10.1007/s00246-025-04037-7. PMID: 41006584

## Oral Presentations

1. **Coyan G.** Evaluating the Relationship Between Organ Dysfunction and Mortality In Severe Sepsis And Septic Shock Following The Implementation Of An Early Sepsis Initiative. Student Research Forum, University of Kansas, April 2011
2. **Coyan G.** Induced Hypothermia During Resuscitation from Hemorrhagic Shock Attenuates Microvascular Inflammation in the Rat Mesenteric Microcirculation. Student Research Forum, University of Kansas, April 2013.
3. **Coyan G.** Induced Hypothermia During Resuscitation from Hemorrhagic Shock Attenuates Microvascular Inflammation in the Rat Mesenteric Microcirculation. Frontiers Regional Research Symposium, Kansas City, MO, June 2013.
4. **Coyan G.** Severe Sepsis and Septic Shock in the Surgical Patient Population: Does Early Goal-Directed Therapy Make a Difference? Kansas Chapter of the American College of Surgeons Annual Meeting, September 2013.
5. **Coyan G.** Induced Hypothermia During Resuscitation from Hemorrhagic Shock Attenuates Microvascular Inflammation in the Rat Mesenteric Microcirculation. American College of Surgeons Clinical Congress, Surgical Forum, Washington D.C., October 2013.
6. Cardounel A, Thomas M, **Coyan G**, Chu D, Wei L, Badhwar V. Procedural Complexity Scoring Guides Quality-based Transition from Open to Robotic Mitral Valve Repair. American Association of Thoracic Surgeons Mitral Conclave, New York, NY, April 2015.
7. **Coyan G.** Robotic Mitral Valve Repair or Replacement is Cost-Neutral to Conventional Sternotomy Using an Activity-Based Costing Model. American Association of Thoracic Surgeons, Mitral Conclave, New York, NY, April 2017.
8. **Coyan G.** In Vivo Functional Assessment of a Novel Bioinspired Scaffold-Based Tissue Engineered Heart Valve. American Association of Thoracic Surgeons, Annual Meeting, San Diego, CA, April 2018.
9. **Coyan G.** Acute In Vivo Functional Assessment of a Biodegradable Stentless Elastomeric Tricuspid Valve. Fellow's Research Day, American Heart Association, Pittsburgh, PA, January 2019.

10. **Coyan G.** Impact of Pre-op Mitral Regurgitation Following Left Ventricular Assist Device Implant. International Society of Heart and Lung Transplantation, Annual Meeting, Orlando, FL, April 2019.
11. Silveira-Filho L, **Coyan G**, D'Amore A, Luketich S, Menallo G, Adamo A, Kashiyama N, Matsumura Y, Wagner W. A Bio-Hybrid Cardiac Patch Combining Poly(ester carbonate urethane)urea and Porcine Cardiac Extracellular Matrix Digest Induces Improved Ventricular Remodeling in a Model of Chronic Ischemia. Society for Biomaterials, Annual Meeting, Seattle, WA, April 2019.
12. **Coyan G.** Impact of Pre-existing Mitral Regurgitation Following Left Ventricular Assist Device Implant. International Society of Heart and Lung Transplantation, Annual Meeting, Orlando, Florida, April 2019.
13. **Coyan G.** Acute In Vivo Functional Assessment of a Biodegradable Stentless Elastomeric Tricuspid Valve. American Association of Thoracic Surgeons, Annual Meeting, Toronto, Canada, May 2019.
14. **Coyan G.** Socioeconomic Factors Affect Late Re-Admissions and Midterm Mortality Following Isolated CABG. American Association of Thoracic Surgeons, Annual Meeting, Toronto, Canada, May 2019.
15. **Coyan G.** High Risk Status for Stage I Palliation in Single Ventricle Pathology Leads to Increased Risk of Mortality and Re-Admission Following Stage II But Not Stage III Palliation. Society of Thoracic Surgeons, Annual Meeting, Online Virtual Meeting, January 2021.
16. Brescia A, Louis C, Luc J, **Coyan G**, Han J, Blitzer D, Wilder F, Bergquist C, Mehaffey J. The Utilization and Impact of Educational Resources Published by the Thoracic Surgery Residents Association. American Association of Thoracic Surgeons, Annual Meeting, Online Virtual Meeting, April 2021.
17. **Coyan G**, Wang C, Ragoowansi J, Well A, West C, Christian C, Harris R, Bichell D, Shah A, Mery C, Bearl D, Beckerman Z. Temperature Goldilocks: A Comparison of Static Storage Options in Pediatric Heart Transplantation. Society of Thoracic Surgeons, Annual Meeting, New Orleans, LA, January 2026.

### **Poster Presentations**

1. **Coyan G**, Birla R. Bioengineered Ventricles: A prototype for an Artificial Ventricle Utilizing a Fibrin Gel Mold. Moses Gunn Annual Surgical Research Conference, Univ. of Michigan, 2008.

2. **Coyan G**, Nazir N, Cannon C, Tenny S, Simpson S, Braxton C, Richart C, Moncure M. Improving Outcomes in Severe Sepsis and Septic Shock Following Implementation of An Early Sepsis Initiative. Society of Critical Care Medicine Clinical Congress, San Diego, California, January 15-19 2011.
3. **Coyan G**, Nazir N, Cannon C, Tenny S, Simpson S, Braxton C, Richart C, Moncure M. Improving Outcomes in Severe Sepsis and Septic Shock Following Implementation of An Early Sepsis Initiative. Student Research Forum, University of Kansas, 2011. *Awarded Outstanding Poster, 1st Place.*
4. **Coyan G**, Tenny S, Cannon C, Richart C, Moncure M. Evaluating the Relationship Between Organ Dysfunction and Mortality In Severe Sepsis and Septic Shock Following the Implementation of an Early Sepsis Initiative. Surgical Infection Society Annual Meeting, Palm Beach, Florida, May 11-14 2011.
5. **Coyan G**, Nazir N, Cannon C, Richart C, Moncure M. Evaluating Outcomes in Severe Sepsis and Septic Shock in the Cardiothoracic Surgical Patient Population Following Implementation of an Early Sepsis Initiative. Society of Critical Care Medicine Clinical Congress, San Juan, Puerto Rico, January 19-23 2013
6. **Coyan G**, Reeder K, Vacek J. Long Term Diet and Exercise Outcomes Following Coronary Artery Bypass Graft Surgery: A Systematic Review. Translational Science 2013, Washington, DC, April 17-19 2013.
7. **Coyan G**, Moncure M, Thomas J, Wood J. Induced Hypothermia During Resuscitation from Hemorrhagic Shock Attenuates Microvascular Inflammation in the Rat Mesenteric Microcirculation. Experimental Biology, American Physiological Society Meeting, Boston, Massachusetts, April 20-24 2013.
8. **Coyan G**, Matsumura Y, Luketich S, Pedersen D, Shanov V, Katz W, Badhwar V, D'Amore A, Wagner W. Acute In Vivo Functional Assessment of a Novel Bioinspired Scaffold-Based Engineered Heart Valve with Biodegradable Magnesium Alloy Stent. McGowan Institute of Regenerative Medicine Annual Retreat, Pittsburgh, PA, March 2018.
9. **Coyan G**, Silveira Filho L, Matsumura Y, Luketich S, Katz W, Badhwar V, Wagner W, D'Amore A. Acute In Vivo Functional Assessment of a Biodegradable Stentless Elastomeric Tricuspid Valve. Department of Cardiothoracic Surgery Research Competition, Pittsburgh, PA, November 2018.
10. Kashiyama N, Kormos R, Matsumura Y, Higuchi S, Silveira Filho L, **Coyan G**, Hong Bin J, D'Amore A, Wagner W. Adipose Derived Stem Cells Enhance Cardiac Function Preservation of a Biodegradable Cardiac Patch and Increase

Vascularization in Rats with Subacute Myocardial Infarction. American Heart Association Annual Meeting, November 2018.

11. **Coyan G**, Lu Michael, Ruppert K, Baker N, Levy R, Luketich J, Schuchert M, Sarkaria I. Activity Based Cost Analysis of Robotic Anatomic Lung Resection During Initial Program Implementation. American Association of Thoracic Surgeons International Thoracic Surgical Oncology Summit, New York, NY, September 2019.
12. **Coyan G**, Chin H, Shah A, Wang Y, Kilic A, Sultan I, Sciortino C, Chu D. Charlson Comorbidity Index is Associated with Longer-Term Mortality and Re-Admissions Following Isolated CABG. American Heart Association (AHA) Annual Meeting, November 2019.
13. **Coyan G**, Castro-Medina M, Viegas M, Da Fonseca Da Silva L, Romano J, Fuller S, Morell V. Congenital Heart Surgery Training Experiences and Perceptions Among Cardiothoracic Surgery Residents. American Association of Thoracic Surgeons, Annual Meeting, Virtual Online Meeting, April 2021.
14. D'Aloiso B, Sosic S, Schoenwald C, Ravi S, Cox K, Schaub R, **Coyan G**, Burki S, Borovetz H, Sciortino C. Development of a Novel Integrated Organ Perfusion Chamber and Reservoir for Ex-vivo Perfusion System. American Society of Artificial Internal Organs 66th Annual Conference, June 2021.
15. Coster J, **Coyan G**, Castrillion C, Ripley R, Growth S, Burt B, Chu D. Exposure to Minimally Invasive Techniques in Thoracic Surgery Residency. The Society of Thoracic Surgeons, 59th Annual Meeting, San Diego CA, January 2023.
16. Harris T, Tracy K, **Coyan G**, Bacchetta M. Farm to (OR) Table: A Pioneering Case of Xenogenic Cross-Circulation. American College of Surgeons Clinical Congress 2024, San Francisco, CA, October 2024.
17. **Coyan G**, Ragoowansi J, Wang C, Well A, West C, Christian C, Harris R, Bichell D, Shah A, Mery C, Bearl D, Beckerman Z. Initial Pediatric Experience of Preserving Cardiac Allografts in a 10°C Cooler. Congenital Heart Surgeon's Society Annual Meeting, Chicago, IL, October 2025.

## Abstracts

1. **Coyan G**, Nazir N, Cannon C, Tenny S, Simpson S, Braxton C, Richart C, Moncure M. Improving Outcomes in Severe Sepsis and Septic Shock Following

- Implementation of An Early Sepsis Initiative. *Critical Care Medicine*. 2010 Dec; 12-supplement (38): Abstract 393.
2. **Coyan G**, Tenny S, Cannon C, Richart C, Moncure M. Evaluating the Relationship Between Organ Dysfunction and Mortality in Severe Sepsis and Septic Shock Following the Implementation of an Early Sepsis Initiative. *Surgical Infections*. 2011 May (12): S-61.
  3. **Coyan G**, Nazir N, Cannon C, Richart C, Moncure M. Evaluating Outcomes in Severe Sepsis and Septic Shock in the Cardiothoracic Surgical Patient Population Following Implementation of an Early Sepsis Initiative. *Critical Care Medicine*. 2012 Dec; 12-supplement (40): Abstract 486.
  4. Kashiyama N, Kormos R, Matsumura Y, Higuchi S, Silveira Filho L, **Coyan G**, Hong Bin J, D'Amore A, Wagner W. Adipose Derived Stem Cells Enhance Cardiac Function Preservation of a Biodegradable Cardiac Patch and Increase Vascularization in Rats with Subacute Myocardial Infarction. *Circulation*. 2018 Nov; 138: A12295.
  5. Spiaggia G, Adamo A, **Coyan G**, Wagner W, D'Amore A. Biomimetic Engineered Chordae Tendineae Produced Via Novel Madrel-less Electrospinning. *Structural Heart*. 2019, Jan 1; 3: p 70.
  6. D'Aloiso B, Cox K, **Coyan G**, Schaub R, Sciortino C, Gurleyik K, Borovetz H. Development of a Novel Ex-vivo Perfusion System: Langendorff Perfusion – Lessons Learned. *ASAIO Journal*. June 1, 2022; 68 (Supp 2): 134 (P71).

### Book Chapters

1. **Coyan G** and Sciortino S. Chapter 32: Ventricular Assistance and Support. *Atlas of Cardiac Surgical Techniques, 2nd Edition*; Editors: Frank Selke and Marc Ruel. Published 2018. ISBN: 139780323462945.
2. **Coyan G** and Morell V. Chapter 79: Hypoplastic Left Heart Syndrome. *TSRA Clinical Scenarios in Cardiothoracic Surgery: 2nd Edition*. Editors: Justin Watson and Clauden Louis. Published 2020. ISBN: 9798669769017.
3. Han J, Luc J, Blitzer D, **Coyan G**, and Sade R. Chapter 125: Ethics in Cardiothoracic Surgery. *TSRA Review of Cardiothoracic Surgery: 3rd Edition*. Editors: Alex Brescia and Clauden Louis. Published 2021. ISBN: 9798410285414.

4. **Coyan G** and Morell V. Chapter 106: Hypoplastic Left Heart Syndrome. *TSRA Review of Cardiothoracic Surgery: 3rd Edition*. Editors: Alex Brescia and Clauden Louis. Published 2021. ISBN: 9798410285414.
5. **Coyan G** and Maeda K. Chapter 120: Lung and Heart-Lung Transplantation in Children. *Mastery of Cardiothoracic Surgery (Fourth Edition)*; Editors: Larry Kaiser, Irving Kron, Joseph Shrager, Gorav Ailawadi, Stephanie Fuller. Published 2024. ISBN: 9781975213008

### **Editorial**

1. Congenital Section Editor, *TSRA Clinical Scenarios in Cardiothoracic Surgery: 2nd Edition*. Published textbook. Editors: Justin Watson and Clauden Louis. Published 2020. ISBN: 9798669769017.
2. Congenital Section Editor, *TSRA Review of Cardiothoracic Surgery: 3rd Edition*. Published textbook. Editors: Alex Brescia and Clauden Louis. Published 2021. ISBN: 9798410285414.
3. Webmaster, Thoracic Surgery Resident's Association WebApp ([www.tsraweb.com](http://www.tsraweb.com)); March 2022-January 2024.

### **Invited Talks/ Moderated Sessions**

1. CT surgery resident panel discussion; The Role of CT Surgery Residents in the ICU. FACTS-CARE Cardiovascular Thoracic Critical Care Conference, 9/17/2016, Washington, D.C.
2. Acute In Vivo Assessment of Tissue Engineered Heart Valves: Early Successes and Challenges. McGowen Institute of Regenerative Medicine, Annual Retreat. Cardiovascular session, March 2018.
3. Tissue Engineered Heart Valves: Design, Development, and Functional Assessment. Bridgeside Research Forum, University of Pittsburgh, 9/28/2018.
4. Heart Valve Repair vs Replacement, What Does the Future Hold? Tissue Injury and Regeneration Conference, University of Pittsburgh, February 2019.
5. Tissue Engineered Heart Valves: Design, Development, and Functional Assessment. Henry Bahnson Research Day, University of Pittsburgh, May 2019.
6. Physician Scientists in Industry (invited panelist). American Physician Scientists Association (APSA): Northeast Regional Conference. January 10, 2021.

7. 2021 Society of Thoracic Surgeons Resident Luncheon (faculty discussion leader). Society of Thoracic Surgeons Annual Meeting. January 31, 2021.
8. AATS Global Grand Rounds Webinar Series: How To Innovate In Congenital Cardiac Surgery?; Navigating the IP World, August 10, 2022. AATS | How to Innovate in Congenital Cardiac Surgery?
9. Challenges and Opportunities in Device Evaluation (Workshop Faculty, Panel Discussant for Pipeline Technologies to Address Valve Durability Issues). Pediatric Heart Valve Global Multidisciplinary Workshop, the Heart Valve Collaboratory, October 15th 2022.
10. Optimizing Performance During Cardiothoracic Surgery Training (session moderator and organizer), Thoracic Surgery Residents Association Luncheon, Society of Thoracic Surgeons Annual Meeting. January 22, 2023.
11. Bioinspired Heart Valve Design: A Tale of Medical Device Development and Entrepreneurship. Norton Children's Hospital/University of Louisville Cardiology Grand Rounds. March 2023.
12. Mechanical Circulatory Support in Pediatric Patients. Pediatric Cardiology Grand Rounds, Children's Hospital of Philadelphia. August 2023.
13. Atrioventricular Canal Defects. Pediatric Advanced Care Concepts, Cardiac Lecture Series. Monroe Carell Jr. Children's Hospital, Nashville TN. October 2024.
14. Bioinspired Heart Valve Design: A Tale of Medical Device Development and Entrepreneurship. Pediatric Heart Institute Quality and Improvement Conference. Monroe Carell Jr. Children's Hospital, Nashville TN. April 30<sup>th</sup>, 2025.

### **Media/Internet Publications**

1. Thoracic Surgery Resident Association Podcast Series. Congenital: Ebstein's Anomaly-Cone Procedure. Garrett Coyan and Jose Da Silva. January 2018. <https://soundcloud.com/tsrapodcast/tsra-podcast-congenital-ebsteins-anomaly-cone-procedure-garrett-coyan-jose-da-silva>
2. Association for Academic Surgery, The Academic Surgeon blog. From Research to Innovation: A Call to Arms for Young Surgeons. Garrett Coyan and Danny Chu. Invited post, April 2018. <http://www.aasurg.org/blog/from-research-to-innovation-a-call-to-arms-for-young-surgeons/>

3. Thoracic Surgery Resident Association Podcast Series. Ethics: Ethical Issues in Dealing with Industry. Garrett Coyan and Robert Kormos. October 2018.  
<https://soundcloud.com/tsrapodcast/ethics-working-with-industry-garrett-coyan-robert-kormos>
4. Thoracic Surgery Resident Association Podcast Series. Congenital: Norwood vs Hybrid. Garrett Coyan with Mahesh Sharma and Richard Ohye. May 2019.  
<https://soundcloud.com/tsrapodcast/hlhs-norwood-vs-hybrid>
5. Regenerative Medicine Today Podcast Series. Podcast #201, discussion with Dr. Garrett Coyan on clinical and translational research training in regenerative medicine, September 30, 2019.  
<http://regenerativemedicinetoday.com/podcast/rmt-podcast-201-garrett-coyan>
6. TSRA Atricure Career Development Webinar Series. Congenital Cardiac Surgery Early Career Development. Garrett Coyan (host and moderator) with Elizabeth Stephens and Damien LaPar. February 18, 2021.  
<https://www.youtube.com/watch?v=b-95Ld1Gas0>
7. TSRA Medtronic Journal Club Webinar Series. Valve Selection Controversies in Congenital Heart Surgery. Garrett Coyan (host and moderator) with Emile Bacha, Stephanie Fuller, David Morales, and Christopher Baird. March 22, 2021.  
<https://www.youtube.com/watch?v=deZoWyg1MMc>
8. Nuts and Bolts of an Academic Job in Cardiothoracic Surgery; Starting Out as a Surgeon-Scientist. AATS/TSRA Career Development Webinar, AATS Global Grand Rounds Series. American Association for Thoracic Surgery, June 28, 2023.  
<https://www.aats.org/resources/aats-tsra-career-development-webinar-nuts-and-bolts-of-an-academic-job-in-cardiothoracic-surgery-starting-out-as-a-surgeon-scientist>

## Patents

1. PCT/US2021/036744: Ex-Vivo Heart Perfusion Systems; provisional filed June 11, 2020, converted to Utility patent June 10, 2021.
2. PCT/US2022/037087: Endotracheal Tubes with Baffles; provisional filed July 2021, converted to Utility patent July 14, 2022.
3. PCT/US2022/037085: Multi-cuffed Endotracheal Tubes; provisional filed July 2021, converted to Utility patent July 14, 2022.

## Academic Entrepreneurship Activities

1. Scaffold-based heart valve replacement: Early start-up formation based on Univ. of Pittsburgh IP for building a scaffold-based tissue engineered heart valve. Serves as the clinical lead on the team and the entrepreneur working towards commercialization. I secured over \$25,000 for company formation in addition to managing over \$500,000 of research capital from July 2018-June 2022. I placed 2nd and won \$15,000 in start-up funding at the Randall Family Big Idea competition in March 2019. I have completed the First Gear Commercialization program (NSF sponsored, \$3,000) and have worked extensively with the Pittsburgh Life Sciences Greenhouse and Innovation Works to move into the start-up phase. A start-up (Neoolife, Inc; [www.neoolife.com](http://www.neoolife.com)) has been created as of September 2020, and I served as a Board of Director, Co-Founder, Chief Medical Officer, and Vice-President of Strategy and Innovation. The company has completed a Pennsylvania Pediatric Device Consortium award (\$50,000, served as Primary Investigator), a Phase I STTR (>\$500,000 non-dilutive capital, served as Co-Primary Investigator for Neoolife) and entered into a strategic development agreement working with a major medical device manufacturer. Currently in the pre-clinical development of various heart valve technologies.
2. RelianceET: Endotracheal tube to prevent aspiration/VAP and tube migration: I served as the Co-PI (along with Dr. Carl Snyderman, ENT physician) for the development of new airway devices to prevent endotracheal tube migration and Ventilator-Associated Pneumonia; 2 provisional patents have been filed (May 2021) and are being converted to full utility patents for filing in May of 2022. Center for Medical Innovation \$25,000 pilot award (PI) July 20 19-January 2021. Completed the Life-X accelerator program (March 2021, Pittsburgh, PA) leading to start-up formation (completed Fall 2021). I serve as the co-founder, Chief Medical Officer, and Board of Director for Respair Inc. as of February 2022. Currently in pre-clinical development and have raised over \$2.5 million of investment and a phase I SBIR.
3. Ex-Vivo Heart Perfusion: Our team has developed a novel system for ex-vivo heart perfusion of donor organs that allows for independent testing and recovery of right ventricle, left ventricle, and total heart configurations in a portable system. This expands upon the limitations of current Langendorff systems currently used in ex-vivo donor heart perfusion. A utility patent has been filed, and a Center for Medical Innovation (University of Pittsburgh) grant funded early prototype development. Currently pending academic license to further develop at Vanderbilt in conjunction with the Vanderbilt Institute for Surgery and Engineering (VICE).