SUVAI GUNASEKARAN
850 N. Dewitt Pl. #15k, Chicago, IL 60611
(608) 692-5127; suvai.gunasekaran@northwestern.edu, Twitter: @suvaig

EDUCATION

Harvard University Cambridge, MA
A.B., Biomedical Engineering, May 2013
S.M., Bioengineering, May 2013

Northwestern University Chicago, IL
Ph.D., Biomedical Engineering, March 2020

RESEARCH EXPERIENCE

Northwestern University
PI: Dr. Daniel Kim, Radiology Chicago, IL (2016-present)
Developed novel magnetic resonance techniques for improved imaging for patients with atrial fibrillation.

Northwestern University
PI: Dr. Patrick Kiser, Biomedical Engineering Chicago, IL (2014-2016)
Developed implantable drug delivery systems for HIV prevention.

University of Cape Town South Africa (Summer 2013)
PI: Dr. Anwar Jardine, Department of Chemistry
Developed a sprayable chitin film embedded with fragrance molecules.

Harvard University Cambridge, MA (2009-2013)
PI: Dr. David J. Mooney, Laboratory for Cell and Tissue Engineering
Developed injectable hydrogels for tissue engineering; Investigated mammalian cell growth in 3D multicomponent biopolymeric scaffolds.

Columbia University New York, NY (Summer, 2012)
PI: Dr. Samuel K. Sia, Laboratory of Molecular and Microscale Bioengineering
Developed an implantable, biodegradable drug-delivery system that can be externally actuated through controlled high-intensity focused ultrasound.

Imperial College London London, England (Summer, 2011)
PI: Dr. Molly M. Stevens, Institute for Biomedical Engineering
Cultured and studied mouse embryonic stem cells to investigate amounts and contents of microvesicles to understand stem cell pluripotency; analyzed the differences between embryonic and iPS cells.

University of Wisconsin-Madison Madison, WI (Summer, 2009)
PI: Dr. Paul F. Lambert, McArdle Laboratory for Cancer Research
Used immunohistochemistry staining to analyze mice epithelium for proteins s6 and p16 activity to correlate the protein activity with cervical cancer.

Northwestern University Chicago, IL (Summer, 2008)
PI: Wayne F. Anderson, Feinberg School of Medicine
Purified and measured the activity (p-nitrophenylacetate assay) of new proteins from *Bacillus subtilis* and *Streptococcus pneumonia* to determine if they are esterases.

University of Wisconsin-Madison Madison, WI (Summer, 2007)
PI: David M. Lynn, Department of Chemical & Biological Engineering
Developed a method to coat synthetic N-Acylated Homoserine Lactone (AHL) compounds onto glass substrates and measured their rate of release in vitro for biofilm inhibition.

REFEREED PUBLICATIONS

1. Naresh N, H Haji-Valizadeh, B Allen, M Barrett, **S Gunasekaran**, D Lee, J Collins, J Carr, D Kim (2022). Accelerated 3D cine MRI with stack of stars k-space sampling and self-navigation of respiratory motion for aortic valve visualization. *Journal of Magnetic Resonance Imaging (submitted)*
2. Maroun A, J Baraboo, **S Gunasekaran**, J Hwang, S Liu, P Greenland, R Passman, D Kim, B Allen, M Markl, M Pradella (2022). Comparison of biplane area–length method Versus 3D volume quantification by cardiac magnetic resonance imaging for the assessment of left atrial volumes in atrial fibrillation. (*submitted*)
3. **Gunasekaran S**, H Haji-Valizadeh, D Lee, R Avery, R Arora, P Greenland, R Passman, M Markl, D Kim (2020). Accelerated, free-breathing, 3D left atrial late gadolinium-enhanced cardiovascular magnetic resonance with stack-of-stars k-space sampling, b-SSFP readout, and XD-GRASP reconstruction for quantification of left atrial fibrosis in patients with atrial fibrillation at 1.5 tesla. *Radiology: Cardiothoracic Imaging*. 2 (5), e200134
4. **Gunasekaran S**, D Kim (2020). Is Otsu thresholding the answer to reproducible quantification of left atrial scar from late gadolinium-enhancement MRI? *Journal of Cardiovascular Electrophysiology. 31 (11), 2833-2835.*
5. **Gunasekaran S**, D Lee, B Knight, L Fan, J Collins, K Chow, J Carr, R Passman, D Kim (2020). Left ventricular extracellular volume expansion is not associated with atrial fibrillation or atrial fibrillation–mediated left ventricular systolic dysfunction. *Radiology: Cardiothoracic Imaging*. 2, e190096
6. **Gunasekaran S,** D Lee, B Knight, J Collins, L Fan, A Trivedi, A Ragin, J Carr, R Passman, D Kim (2019). Left ventricular fibrosis does not predict recurrence of atrial fibrillation following catheter ablation. *Pacing and Clinical Electrophysiology*. 43, 159-166
7. VanWagner L, S Uttal, B Lapin, J Lee, A Jichlinski, T Subramanian, M Heldman, B Poole, E Bustamente, **S Gunasekaran**, C Tapia, A Veerappan, S Wong, J Levitsky (2016). Use of six-minute walk test to measure functional capacity after liver transplantation. Physical Therapy. 96, 1456-1467.
8. Levitsky J, **S Gunasekaran**, S Jordan, R Shah (2014). Review of regenerative medicine applications in organ transplantation. *Gastroenterology*. 146, 1827-1828.
9. Lombardo C, **S Gunasekaran** (2014). Extracurricular service projects prepare engineering students for real world problems. *Impact of Globalization On Engineering Education*, 71-82.
10. **Gunasekaran S**, Q Wan, O Schoppe, D Holland, E Roche, H Hur, C Walsh (2013). Multifunctional laparoscopic trocar with built-in fasical closure and stabilization. *J. of Medical Devices*. 7(3), 121-123.
11. Breitbach AS, AH Broderick, CM Jewell, **S Gunasekaran**, Q Lin, DM Lynn, HE Blackwell (2011). Surface-mediated release of a synthetic small-molecule modulator of bacterial quorum sensing: Gradual release enhances activity. *Chemical Communications*. 47, 370-372.

GRANTS/FUNDING

NIH K99/R00 Pathway to Independence Award (1K99HL161469-01) (2022 – present, $941,607)

Sylvia Wolff Research Grant Fund (2020-present, $50,000)

Multidisciplinary Training Program in Child and Adolescent Health (TL1) (2020-2022)

Training Program in MRI (2019-2020)

Northwestern University Biotechnology Training Program (2015-2016)

TEACHING EXPERIENCE

Teaching Assistant (BME 403, Advanced Cardiophysiology) – Northwestern University, Evanston, IL (2015)
Chicago Youth Programs – Mentored high school students to help them get into college (2013-14)
Teaching Fellow (ES 222, Advanced Cellular Engineering), Harvard (2012)
Peer Tutor (MATH 21a, MATH 21b, PHYSICS 11), Bureau of Study Counsel, Harvard (2011)
Course Assistant – Helped with homework and grading for calculus class (MATH 21a) at Harvard (2010)
ExperiMentors – Taught elementary school students science and math (2010-12)
Harvard Youth Leadership Institute – Taught middle school students leadership skills (2010-12)
Teacher, Kumon – Program for 1st to 11th graders, Cambridge, MA (2009-10)
Teaching Assistant (AP Calculus AB and BC classes), Memorial High School, Madison, WI (2009)

INVITED TALKS

WAAS@60 – A Planetary Moment – World Academy of Art & Science, Session: Role of Youth in the Multilateral System. February 16, 2021.
Youth Leaders-21 – Youth Leadership Network, Session: Comparing Experiences: How to Mobilize Youth Social Movements. December 13, 2020.
Second Shift – Pitch: How to Present Your Amazing Idea! August 31, 2017
Harvard University Women in Business – Venturing Out: Entrepreneurship at Harvard and Beyond. November 8, 2012.
Cushing Academy – Social Innovation, 21st Century Initiative Special Assembly. November 30, 2012.
Clutch Conference on Social Innovation & Global Citizenship – Phillips Academy Andover, April 14, 2013.

POSTERS & PRESENTATIONS

1. **S Gunasekaran**, R Catania, M Pradella, K Hong, R Passman, D Lee, M Markl, D Kim (2023). Deblurring 3D LA LGE Images obtained with Stack-of-Stars k-space Sampling using View Sharing and KWIC Filtering. SCMR, January 25, San Diego, CA.
2. J Baraboo, M Pradella, A Maroun, E Weiss, J Hwang, **S Gunasekaran**, D Lee, R Passman, D Kim, M Markl (2023). Association of Atrial 4D Flow Hemodynamics with Stroke History, Race and Gender in AF Patients. SCMR, January 27, San Diego, CA.
3. J Akuamoah, P Ju, A Culver, B Benefield, L Hsu, **S Gunasekaran**, M Ison, R Kalhan, B Allen, M Markl, D Kim, C Yancy, D Lee (2023). Comprehensive quantitative assessment of Long COVID patients with chest pain by stress cardiovascular magnetic resonance imaging. SCMR, January 27, San Diego, CA.

4. D Bishara, K Hong, **S Gunasekaran**, M Markl, D Lee, B Allen, R Passman, D Kim (2023). Improved self-navigation in XD-GRASP reconstruction of 3D left atrial LGE using exploratory factor analysis. SCMR, January 27, San Diego, CA.
5. A Culver, P Ju, D Kim, B Benefield, L Hsu, **S Gunasekaran**, M Ison, R Kalhan, B Allen, M Markl, C Yancy, D Lee (2022). Myocardial Perfusion Reserve Quantified by Stress Cardiovascular Magnetic Resonance Imaging Is Reduced in Long COVID Patients Presenting with Chest Pain. AHA, November 5-7, Chicago, IL.
6. **S Gunasekaran**, J Hwang, K Hong, M Elbaz, R Passman, S Nazarian, E Kholmovski, D Kim (2022). Contrast and left atrial fibrosis from late gadolinium enhancement are influenced by the balanced steady-state free precession flip angle. SMRA, August 25, Los Angeles.
7. J Hwang, **S Gunasekaran**, A Katsaggelos, M Mehrnia, M Markl, D Lee, M Elbaz, R Passman, R Arora, D Kim (2022). Intra and inter-rater agreement of la fibrosis quantification derived from 3d LGE using b-SSFP readout and XD-GRASP reconstruction. SMRA, Los Angeles (Accepted, not presented)
8. M Pradella, J Baraboo, **S Gunasekaran**, A Maroon, A DiCarlo, M Collins, R Arora, P Greenland, R Passman, M Markl (2022). Evidence for improved left atrial blood flow dynamics after pulmonary vein isolation in patients with atrial fibrillation. ISMRM, London.
9. J Baraboo, E Weiss, M Pradella, L Ma, J Hwang, **S Gunasekaran**, M Falcao, C Roy, M Stuber, R Passman, D Kim, M Markl (2022) RR-resolved 5D flow for decoding the impact of cardiac rhythm on left atrial flow dynamics in atrial fibrillation and stroke. ISMRM, London.
10. **S Gunasekaran**, J Hwang, D Shen, A Katsaggelos, M Elbaz, R Passman, D Kim (2021). Automated segmentation of the left atrium from 3d late gadolinium enhancement imaging using deep learning. ISMRM, Virtual.
11. **S Gunasekaran**, J Hwang, D Shen, A Katsaggelos, M Elbaz, R Passman, D Kim (2021). Automated segmentation of the left atrium from 3d late gadolinium enhancement imaging using deep learning. ISMRM, Virtual.
12. J Baraboo, A DiCarlo, **S Gunasekaran**, L Ma, M Messina, P McCarthy, R Arora, P Greenland, R Passman, D Lee, D Kim, M Markl (2021) 4D flow CMR metrics associated with atrial fibrillation catheter ablation treatment success. SCMR, Virtual.
13. **S Gunasekaran**, M Elbaz, D Lee, M Markl, R Passman, D Kim (2020). 3D left atrial LGE MRI at 1.5 Tesla: calibration of fibrosis cutpoint and initial evaluation in patients with and without atrial fibrillation. ISMRM, Virtual.
14. **S Gunasekaran**, H Haji-Valizadeh, B Allen, R Avery, D Kim (2020). Accelerated, free-breathing, contrast enhanced thoracic MR angiography with XD-GRASP reconstruction. ISMRM, TBD.
15. DiCarlo A, H Haji-Valizadeh, **S Gunasekaran**, P McCarthy, R Passman, P Greenland, D Lee, D Kim, M Markl (2020). Cardiac rhythm impacts left atrial hemodynamics measured with 4D flow and real time phase contrast MRI: evaluation in healthy controls and patients with atrial fibrillation. ISMRM, TBD
16. **S Gunasekaran**, D Kim (2020). Improved Sampling Efficiency of 3D Left Atrial Late Gadolinium Enhancement. Midwest MRI Potluck, May 7, Virtual.
17. Sherlock D, L Ma, J Baraboo, **S Gunasekaran**, P McCarthy, D Lee, R Arora, P Greenland, R Passman, D Kim, M Markl (2020). 4D flow MRI and left atrial registration for assessment of left atrial hemodynamics in patients with atrial fibrillation compared to transesophageal echocardiography. SCMR, February 13, Orlando, FL.
18. **Gunasekaran S**, A DiCarlo, H Haji-Valizadeh, D Lee, M Markl, D Kim (2020). Test-retest reliability of left atrial and transmitral blood flow measurements using accelerated real-time phase-contrast CMR. SCMR, February 13, Orlando, FL.

19. **Gunasekaran S**, D Lee, B Knight, R Avery, H Hassan Haji-Valizadeh, R Arora, P Greenland, R Passman, M Markl, D Kim (2019). Self-navigated, free-breathing 3d left atrial late gadolinium enhancement MRI: a preliminary study for evaluation of image quality and quantification of atrial fibrosis in patients with atrial fibrillation at 1.5T MRI Scanners. RSNA, December 2, Chicago, IL.
20. **Gunasekaran S**, D Lee, B Knight, R Avery, H Hassan Haji-Valizadeh, P Greenland, R Passman, M Markl, D Kim (2019). Self-navigated, free-breathing 3d left atrial late gadolinium enhancement MRI at 1.5 tesla: a preliminary study for evaluation of image quality and quantification of atrial fibrosis in patients with atrial fibrillation. SMRA, August 28, Nantes, France.
21. **Gunasekaran S**, H Hassan Haji-Valizadeh, R Passman, D Lee, D Kim (2019). Self-navigated, free-breathing 3d left atrial late gadolinium enhancement MRI with stack-of-stars k-space sampling and grasp reconstruction: a preliminary study for quantification of atrial fibrosis. ISMRM, May 13, Montreal, QC, Canada.
22. **Gunasekaran S**, H Hassan Haji-Valizadeh, L Ma, R Arora, P Greenland, D Lee, R Passman, M Markl, D Kim (2019). Highly accelerated real-time phase-contrast and cine MRI using radial k-space sampling and compressed sensing for imaging blood flow and function in the left atrium: inter-scan reproducibility analysis. ISMRM, May 13, Montreal, QC, Canada.
23. Aristova M, A Vali, L Ma, H Haji-Valizadeh, **S Gunasekaran**, D Kim, M Markl, S Schnell (2019). Sensitivity analysis of dual-venc 4D flow MRI with high venc undersampling for assessment of intracranial flow networks. ISMRM May, Montreal, QC, Canada.
24. **Gunasekaran S**, H Hassan Haji-Valizadeh, L Ma, R Arora, P Greenland, D Lee, R Passman, M Markl, D Kim (2019). Accelerated real-time phase-contrast MRI using radial k-space sampling and compressed sensing for imaging blood flow in the left atrium: inter-scan reproducibility analysis. SMCR, February 8, Bellevue, WA.
25. Ma L, **S Gunasekaran**, S Schnell, K Jarvis, P McCarthy, D Lee, R Arora, P Greenland, R Passman, D Kim, M Markl (2019). Inter-scan reproducibility analysis of a novel 4D flow workflow for improved assessment of left atrial hemodynamics. SMCR, February 8, Bellevue, WA.
26. Ma L, S Schnell, **S Gunasekaran**, P McCarthy, D Lee, R Arora, P Greenland, R Passman, D Kim, M Markl (2019). Dual-venc 4d flow MRI with arrhythmia rejection and left atrial registration for assessment of left atrial hemodynamics in patients with atrial fibrillation. SMCR, February 8, Bellevue, WA.
27. **Gunasekaran S**, J Collins, R Passman, B Knight, J Carr, D Lee, D Kim (2018). Patients with atrial fibrillation mediated left ventricular systolic dysfunction do not have left ventricular fibrosis. RSNA, November 28, Chicago IL.
28. **Gunasekaran S**, J Collins, R Passman, B Knight, J Carr, D Lee, D Kim (2018). Patients with atrial fibrillation mediated left ventricular systolic dysfunction do not have left ventricular fibrosis and experience significant improvement in ejection fraction following ablation. AHA Scientific Sessions, November 10, Chicago IL.
29. Hayes J, M Loafman, A Cudmore, **S Gunasekaran** (2018). Cultivating family physicians with innovative longitudinal clinic curriculum. STFM Conference on Medical Student Education, February 2, Austin TX.
30. **Gunasekaran S**, J Collins, K Hong, J Carr, D Kim (2017). Improving precision of arrhythmia-insensitive rapid cardiac t1 maps using a non-local means filter. ISMRM 2017, April 26, Honolulu, HI.
31. Evanoff A, S Sung, **S Gunasekaran**, M Clark, G Doncel, P Kiser (2016) A Single-Reservoir Microbicide Intravaginal Ring for Dual Delivery of Tenofovir and Elvitegravir. HIV Research for Prevention 2016, October 19, Chicago, IL.

32. **Gunasekaran S** (2015). Tenofovir alafenamide fumarate subcutaneous implants for long-acting HIV pre-exposure prophylaxis. BMES, October 9, Tampa, FL.
33. Aesram A, **S Gunasekaran**, R Veazey, T Hope, P Kiser (2015). Tenofovir alafenamide fumarate subcutaneous implants for long-acting HIV pre-exposure prophylaxis. Northwestern University Biomedical Engineering Research Day, April 30, Chicago, IL.
34. Uttal S, L VanWagner, B Lapin, A Jichlinski, J Lee, B Poole, T Subramanian, M Heldman, E Bustamente, **S Gunasekaran**, C Tapia, A Veerappan, S Wong, J Levitsky (2014). Improved but persistent poor functional performance at 1 year after liver transplantation: Predictors of performance and opportunities for intervention. AASLD, November 7, Boston, MA.
35. Qian W, O Schoppe, **S Gunasekaran**, D Holland, E Roche, H-C Hur, C Walsh (2013). Multifunctional laparoscopic trocar allowing for fascial closure and stabilization. Design of Medical Devices Conference, April 8-11, Minneapolis, MN.
36. Lombardo C, **S Gunasekaran** (2013). Extracurricular service projects prepare engineering students for real world problems. World Congress on Engineering Education. Oct 24, Beirut Lebanon.
37. Ku K, **S Gunasekaran**, S Choi, K Kim, J Kye, E Chung (2012). SPOUTS OF Water: Innovating for clean water. Cloudy with a chance of solutions: The Future of Water. October 12, Radcliffe Institute for Advanced Study, Harvard University, Cambridge, MA.
38. **Gunasekaran S,** K Ku, S Choi, K Kim, J Kye, E Chung (2012). Sustainable solution for potable water in developing countries. Naval Academy Science and Engineering Conference, Nov. 4-6, Annapolis, MD.
39. Gladman S, I Chen, **S Gunasekaran**, N Joshi (2012). Multidimensional approaches to understanding cancer cell motility. Advanced Cellular Engineering Cell Race Project. December 11, Cambridge, MA.
40. **Gunasekaran S**, E Roche, C Floryan (2011). Improved micropatterning for faster cell motility. Advanced Cellular Engineering Cell Race Project. December 9, Cambridge, MA.
41. Qian W, O Schoppe, **S Gunasekaran** (2011). Multifunctional laparoscopic trocar for fascial closure and stabilization. Medical Device Design Presentations, May 7, Cambridge, MA.
42. **Gunasekaran S**, N Huebsch, O Chaudhury, DJ Mooney (2010). Investigating mammalian cell growth in 3D multicomponent biopolymeric scaffolds. Presented at the Harvard Undergraduate Research Symposium, December 2, Cambridge, MA.

LEADERSHIP EXPERIENCE (past five years)

Radiology: Cardiothoracic Imaging

Position: Deputy Editor for Image In (2023-present)
Position: Trainee Editorial Board (2022-present)
Create content from Radiology: Cardiothoracic Imaging articles. Participate in mentored peer review and support editing, reviewing, and promoting imaging research.

SMRA Early Career Committee

Position: Co-Chair (2023-present)
Lead the Society for Magnetic Resonance Angiography's Early Career Committee. Manage early career students on educational programming and social media for the SMRA.

US National Committee for UN Women, Chicago Chapter

Position: President (2021-2022)

Position: Vice President (2020-2021)

Position: Director of Events and Activities (2016-2020)

Organize events in Chicago to promote the efforts of UN Women, such as panels on women in politics and girls education & empowerment, and fundraisers for the HeForShe campaign and disaster relief efforts in Nepal and Haiti.

Chicagoland Scholars Strategy Network

Position: Fellow (2020-present)

Plan events for SSN, an organization of university-based scholars who are committed to using research to improve policy and strengthen democracy, to connect Chicagoland researchers with local lawmakers to promote evidence-based policy.

Surge for Water

Position: Governing Board Member (2022-present)

Position: Associate Board Member (2018-2022)

Plan events to fundraise and support Surge for Water, a NGO that creates clean water solutions in developing countries around the world in a sustainable and community-focused way.

UN Major Group for Children and Youth

Position: *Science-Policy Focal Point Coordinator (2019-2020)*

Enhance the science-policy interface across different intergovernmental processes, as well as coordinate science, technology, and innovation policy related discussions at the UN.

Marianne Lalonde for Alderman

Position: Social media manager (2018-2019)

Run the social media platforms for Marianne Lalonde's Aldermanic campaign. Dr. Lalonde received a Ph.D. in Chemistry from Northwestern University.

ENTREPRENUERSHIP EXPERIENCE

SPOUTS of Water (spouts.org) Uganda (2011-2018)

Sustainable Point-Of-Use Treatment and Storage (SPOUTS) of Water is an NGO we founded that works to bring clean water to Uganda by building a factory to produce ceramic water filters. To date we have provided over 100,000 Ugandans with clean water using our filters. I lived in Uganda over the summer (in 2012 and 2013) overseeing the construction of the plant, installing the machinery, and starting the ceramic filter manufacturing process.

Ceramics United (ceramicsunited.org) South Africa (2013-2016)

Ceramics United was an official project of World Design Capital 2014. Our mission is to promote arts education for youth and to share South Africa's rich and dynamic ceramics history with the world. To that end, we established an international surface design competition to recognize the exceptional work of students, potters, and artists from all around the world, with a special focus on Cape Town.

HONORS & AWARDS (SELECTED)

Graduate School
Phi Rho Grand Chapter Meeting Elected Delegate (2015), Northwestern Global Health Case Competition Winner (2014), Health and Society Best Poster Award (2013)

College
ArtScience Prize Student Idea Translation Fellowship (2013); Booth Fellowship (2013); NSF Graduate Research Fellowship (2013, declined); ThinkImpact Institute Scholar (2013, declined); NASEC Best Poster Award (2012), Cushing Inspiration Award (2012), Amgen Scholar (2012); SPOUTS of Water, Runner-Up Award for Harvard President's Challenge for Social Entrepreneurship (2012); Committee on Africa Studies Fellowship (2012); NIH Bioengineering Summer Research Fellowship (2012, declined); Harvard Youth Leadership Institute Best Teacher Award (2012); Weissman Fellowship (2011); Amgen Fellowship (2011, declined); Harvard-Cambridge Summer Research Fellowship (2011, declined); Harvard College Research Award (2010, 2011, 2012); Herchel Smith Summer Research Fellowship (2010)

High School
Intel Science Talent Search Finalist (2009); US Presidential Scholar (2009); Stamps Leadership Scholar (2009, declined); National Merit Scholar (2009); Myrvhold Scholar (2009); Siemens AP Scholar (2009); National Youth Science Camp WI Delegate (2009); WI Academic Excellence Scholar (2009); H&R Block Merit Scholarship (2009); Badger Girls State (2008); Intel International Science and Engineering Fair Award (2008); National AP Scholar (2008); Science Olympiad State Champion (2008); Gatzke Award (2007); DuPont Science Challenge Honorable Mention (2006)