HARIKRISHNAN PARAMESWARAN

Assistant Professor Dept of Bioengineering Northeastern University <u>https://web.northeastern.edu/breathe/</u> Email:<u>h.parameswaran@neu.edu</u> 805 Columbus Avenue Room 219, ISEC Ph: (617) 373-7049 Twitter: @LabBreathe

EDUCATION AND RESEARCH EXPERIENCE

2014-2016	Boston University <i>Project:</i> Modeling the cortical actin cytoskeleton <i>Funding:</i> NIH/ NHLBI Pathway to Independence Award I number 1K99HL122513 <i>Mentor:</i> Dr. Kenneth R Lutchen	Postdoctoral Fellow K99/R00 (PI),
2012-2014	Boston University <i>Project:</i> Factors Determining Hyperresponsiveness for Ir <i>Mentor:</i> Dr. Kenneth R Lutchen	<i>Postdoctoral Fellow</i> ntact Airways
2011-2012	Boston University 50% effort was at Wyss Institute, Boston MA (Designatio Project: implementing variable breathing patterns in Wy on-a-chip system Mentor: Dr. Bela Suki	<i>Postdoctoral Fellow</i> n did not change) rss institute's lung-
2009-2012	Boston University <i>Project:</i> Effect of Variable Stretch on Mitochondrial dyna production in smooth muscle cells. <i>Mentor:</i> Dr. Bela Suki	<i>Postdoctoral Fellow</i> mics and ATP
2009	Boston University Ph.D. Bid Dissertation: Effect of Microscopic Structural Changes on Functional Properties: Imaging and Modeling the Lung P Dimensions Research Advisor: Dr. Bela Suki, Committee Members: Dr. Dimitrije Stamenovic, Dr. Wayn Dr. Kenneth R. Lutchen, Dr. Elise F Morgan.	omedical Engineering Macroscopic arenchyma in Three e Mitzner,
2004	Boston University M.S. Bio Thesis: Analyzing the Microscopic Structure of Lung Processing Techniques	omedical Engineering Tissue Using Image

B.Tech. Electronics & Telecommunication Engg. 1999 Kerala University Thesis: Spectral Analysis of lung sounds.

EMPLOYMENT

2017- present	Assistant Professor
2009-2012	Post-Doctoral Fellow
2002-2009	Research Assistant
5/03 - 8/03	Summer Intern, CT Division
1999-2002	Systems Engineer

Northeastern University, Boston, MA Boston University, Boston MA Boston University, Boston MA GE Medical Systems, Waukesha, WI WT Call translations group, Maidenhead, UK

CURRENT & PENDING RESEARCH SUPPORT

My lab has had federal funding since its inception and will continue to do so until 2026.

EXTERNAL

Current :	NSF CAREER AWARD (7/21-6/26)			
	Elucidating the role of Collective Cell-Matrix interactions in the mechanobiology			
	of airway narrowing			
	PI: Hari Parameswaran			
	Total Funding: \$602,650			
	NIH NIGMS R01: GM110268 (8/20-07/24)			
	In vivo analysis of mechanotransduction [PI: Erin Cram]			
	Role: Co-Investigator responsible for Aim 2 of 3 aims			
	Total funding: \$1,338,352.00			
Complete	Completed: NIH R21 HL129468 (06/01/16 – 05/31/19)			
	Advanced Image-Based Approach to Assess How Fibrillar Collagen Modulates			
	Airway Reactivity			
	Role: PI			
	Total funding: \$375,000			
	NIH NHLBI R00 HL122513 (7/1/17- 6/30/21)			
	Extracellular determinants of airway smooth muscle force: A new paradigm for			
	sustained airway constriction			
	Role: PI			
	Total Costs: \$249,000/year			
	2			

INTERNAL:

Tier 1 grant \$50,000 **(**7/1/19 – 8/30/20.)

Alpha Fund Prototype (one-time award) \$10,000

HONORS

[2021] National Science Foundation (NSF) Early Career Development (CAREER) award (PI)

[2021] One of 6 Rising stars in Mechanobiology, Center for Multiscale & Translational Mechanobiology, Boston University, Boston MA.

[2020] NIH NIGMS R01 (co-investigator responsible for Aim 2 of 3 aims)

[2019] Tier 1 award from Northeastern University (PI)

[2019] Session chair for oral session on Respiratory biomechanics and mechanobiology for BMES annual meeting.

[2018] Alpha fund award from Northeastern University.

[2018] Session Chair for poster session, International conference of the American Thoracic Society, San Diego, CA.

[2017] Session chair for poster discussion session "Unraveling the Extracellular Matrix": International conference of the American Thoracic Society, Washington D.C.

[2017] Recipient NIH/NHLBI R00 award (PI)

[2016] Recipient NIH/NHLBI R21 award (PI)

[2014] Recipient NIH/NHLBI K99 Pathway to Independence award (PI)

[2014] Session chair for World Congress of Biomechanics, Boston, MA.

[2013] American Thoracic Society's abstract scholarship award.

[2013] Session chair for international conference of the American Thoracic Society, Philadelphia, PA.

[2011-2018] One of 35 peer-nominated experts to serve on the program committee member for the Respiratory Structure Function assembly of the American Thoracic Society (ATS). This body sets the agenda for the one of the largest & prestigious respiratory conferences (16,000 attendees from 95 countries).

[2009] Finalist for best Ph.D. thesis dissertation, College of Engineering, Boston University, Boston MA.

[2005] Chairman's award for best research publication, Boston University, Boston MA.

[2005] Boston University Graduate Teaching Fellowship.

[2002-2009] Boston University Graduate Research Fellowship

[1995-1999] University merit scholar, College of Engineering, Kerala University.

Service

Grant Review Activity

- [2020] Invited Reviewer for DoD grant applications for the Department of Defense Congressionally Directed Medical Research Programs (CDMRP).
- [2019, 2021] Invited Reviewer for grant applications: Natural Sciences and Engineering Research council of Canada.
- [2021] Invited Reviewer for grant applications: Medical Research Council, UK Research & Innovation (UKRI MRC), United Kingdom
- [2022] Invited reviewer for NASA Postdoctoral program.

Journal Peer review activity

Peer reviewer for the following journals: Elife, Scientific Reports, Biophysical Journal, Journal of Applied Physiology, PLoS One, Journal of Biomechanics, Annals of Biomedical Engineering, IEEE Transactions on Biomedical Circuits and Systems, Journal of Respiratory Research, Physiological Measurement, Respiratory Physiology and Neurobiology, Fluctuation and Noise Letters, Biomedical Signal Processing and Control and The Anatomical Record. Review Editor for Frontiers Networks in the Respiratory System

Service for professional Societies

Session chair for BMES annual meeting (Podium talks, 2019), Session chair for the American Thoracic Society International conferences (2018, 2017, 2013), World Congress of Biomechanics, Boston MA. Program committee member for the Respiratory Structure Function assembly of the American Thoracic Society (ATS) from 2011 to 2018. Expert Panelist for ATS Respiratory structure function Journal club (2019). Abstract reviewer for SB3C conference (2021).

Service at Northeastern University

[Graduate student affairs]: I served on the Bioengineering Graduate student affairs committee from: 2018-2020: As part of this committee, I contributed shape to rules for Ph.D. qualifier exams, graduation and curriculum requirements and tracking the progress of Ph.D. students. I chaired the Ph.D. qualifier exam committee for the Molecular cellular and tissue engineering track (11 students in Fall 20 and 5 students in Fall 2019), reviewed admissions for spring and fall semesters (2018-21). I routinely serve as an examiner for Ph.D. qualifier exams every semester. I also <u>organized the department seminar</u> series in Fall 2020. The seminars were all remote due to the COVID pandemic.

[Faculty recruitment] I have served on three faculty recruitment committees. In 2020 and 2021, I served on search committees for an Associate/Assistant professor search in mechanobiology. I reviewed candidate CVs, conducted Zoom and in-person interviews of faculty candidates. In 2019, I served on a faculty search for an Assistant Professor.

[Outreach] To encourage and enable increased participation of underrepresented minority students to pursue a career in STEM fields, we use NSF funding to host two underrepresented minority students from the Boston Public School system in our lab for six weeks in summer '22 as part of the University's Young scholar program. These students will participate in our ongoing research. They will have broad exposure to the field of bioengineering and the exciting possibilities it offers. These students will also receive help and advice on college admissions. My lab participated in the building bridges activity (Dec 1, 2017, Nov 30t,h 2018 and April 26th, 2018) where we have students build a simple tensegrity structure to explain to students how the malleable cell cytoskeleton allows it to adapt to fluctuating mechanical environment. The hands-on activity is accompanied by a brief presentation by a graduate student.

[Miscellaneous activities] I participated in graduate student recruitment events (poster presentation on graduate student visit day, manned booth at BMES conference to promote the department). I created a trifold flyer for the department that is currently used to promote the department at conferences. I have represented the department at the Masters graduation ceremony (2018), met with parents of prospective undergraduate students.

RESEARCH COLLABORATORS

External

- Dr. Ramaswamy Krishnan, Beth Israel Deaconess Medical Center
- Dr. Xingbin Ai, Mass. General Hospital
- Dr. Yan Bai, Mass. General Hospital
- Dr. Paul Mathew MD. Tufts Medical Center, Boston
- Dr. Dhananjay Tambe, University of South Alabama.

Internal

- Dr. Erin Cram, Dept. of Biology Northeastern University
- Dr. Jeff Ruberti, Dept. of Bioengineering, Northeastern University

TEACHING & ADVISING

Summary: I created and taught <u>*two*</u> new graduate-level courses in Bioengineering Department: (1) **BIOE 5440: The Cell as a machine**" and (2). "**BIOE 5800 Signals, Systems & Control for Bioengineers**". I also taught a general engineering undergraduate mathematics class, GE2361 Math methods for Bioengineers (GE2361) for four semesters.

- [Fall 21] Created and taught a new graduate-level course: BIOE5800: Signals and Systems in Bioengineering.
- [Fall 21] Taught Cellular physiology portion of BIOE6100: Medical Physiology (graduate level course) [Students did not evaluate cellular physiology separately]

- Created and taught a new graduate level course "BIOE5440: Cell as a Machine" in Spr 18, Spr19, Spr20 and Spr21.
- Taught "Math Methods for Engineers", an undergraduate mathematics course in Spr 17, Fall 18, Fall 19 and Fall 20.
- Guest lecturer for Multiscale Biomechanics (BIOE5650) in Fall '18: delivered lecture on multiscale mechanics of the smooth muscle.
- Guest lecture in "Principles of Bioengineering (BIOE 7374) in Spr'17, Fall 19 and Fall '20. Delivered lecture on the role of physical forces in disease development.

Semester	Course	New	Enrollment	Trace Evaluations $(/5.0)$	
				Learning	Instructor
	BIOE5800:				
Fall 21	Signals, Systems & Control for	Yes	10	4.7	4.6
	Bioengineers				
Spring 21			33	4.4	4.7
Spring 20	BIOE5440:	Yes	22	4.4	4.5
Spring 19	The cell as a machine		21	4.1	4.3
Spring 18			6	5.0	4.7
Fall 20			35	4.4	4.6
Fall 19	GE 2361: Math Methods for	No	42	4.2	4.0
Fall 18	Engineers		17	4.2	3.8
Spring 17			21	4.0	4.3

<u>Teaching Evaluations</u> (Anonymous rating by students)

POSTDOCTORAL FELLOWS & VISITING SCHOLARS

- 1. Samuel Polio, PhD: Postdoctoral fellow in my lab (1 first author paper in Sci. Reports).
- 2. Diego Vargas, PhD: Visiting Scholar from KU Leuven, Belgium (1 first author paper in Biophysical Journal)
- 3. Niccole Schaible, PhD: Visiting Scholar from Beth Israel Deaconess hospital.

PhD STUDENTS SUPERVISED

1. Suzanne Elizabeth Stasiak [expected completion Fall '22]

Project Title: The mechanobiology of Asthma.

Suzie is working on understanding the fundamental mechanisms by which how pathological changes in the extracellular Matrix can lead to the exaggerated constriction of airways seen in asthmatics

Publications: Three peer-reviewed research articles (1 first author), 22 Conference Presentations.

Awards: American Thoracic Society Abstract scholarship for best rated abstract (2022), Northeastern University Outstanding Graduate Research award (2021), Biophysical Society Annual conference travel award(2020), Northeastern University Bioengineering Symposium Outstanding Oral Presentation (2019), American Thoracic Society Abstract scholarship for best rated abstract (2019).

2. Ryan Robert Jamieson [expected completion Spring '23]

<u>Project Title:</u> The development of a method to target pathological collagen remodeling as a therapy for asthma

Ryan is working on developing a potential therapy for Asthma that targets collagen remodeling in the airway extracellular Matrix.

Publications: Three peer-reviewed research articles (1 first author), 11 Conference Presentations.

Awards: American Physiological Society (APS) APS Select award for best physiology paper (2021), American Thoracic Society Abstract scholarship for best rated abstract (2020), 2nd place in poster presentation, Northeastern University college of Engineering, Poster Symposium (2020), Undergraduate Research Opportunities Program Award Boston University College of Engineering (2017)

Three new Ph.D. students: Ms. Vasuretha Chander, Ms. Ziwen Wang and Mr. Benjamin Gokyadosh will join the lab in Fall 2022

Thesis committee member **Mckay Cavanaugh** Ph.D. Chem. Engineering, Northeastern University (current)

- Thesis committee member Narges Yazdani Ph.D. Chem. Engineering, Northeastern University (current)
- External Reader for **Amin Iravani** Ph.D. Physiology, University of Auckland, Auckland, NZ (Spring 21)
- Thesis committee member for **Jeffrey Bouffard**, Ph.D. Bioengineering, Northeastern University (Fall' 19)
- External Reader for **Alvenia Cairncross** Ph.D. Physiology, University of Western Australia, Perth (Fall 18)

- Thesis committee member for **Jarred Mondendo**, Ph.D. Biomedical Engineering, Boston University (Fall' 17)
- Thesis committee member for **Perla Castaneda**, Ph.D. Biology, Northeastern University

UNDERGRADUATE STUDENTS

Ralston Augspurg: (Spring 2019-Present) co-author on 1 publication and 2 conference abstracts. Awarded Northeastern University's PEAK SUMMIT award for excellence in research.

Katherine Coyne: (Spring and Summer 2018): co-author on a conference abstract. Awarded Northeastern University's PEAK SUMMIT award for excellence in research. **Nihal Bharath** (Spring 2019-Spring 2020) co-authors on one manuscript.

Alec Silverman (Spring 2019)

Meagan Morgan (Spring 2019)

Tarun Kumar (Spring 22)

Zoia Okulova (Spring 22)

Francheska Torres, Bridget Bergstrom, Zoe Simonson (Fall 2017-Spr 2018) Sponsored an undergraduate Capstone group (advised by Dr. Jeff Ruberti) Michael Parrish, Taylor Duckworth, Alexander Rivas, Jacob Potts and India Aitkenhead

M.S. STUDENTS

- [2019] Thesis committee member for Catherine Luo (Advisor: A.Asthagiri)
- [2018] Thesis committee member for Alex Hruska (Advisor: A.Asthagiri)

INVITED TALKS

- 1. New Paradigms in the development of Asthma: Unraveling the role of the Matrix Draper Labs, Cambridge, MA, September 22, 2017.
- 2. Bioengineering Custom Cell Microenvironments with Versatile Maskless Photopatterning Nature research webcast * (with Dr. Manuel Thery, University of Grenoble, France) November 28, 2018
- Can increased stiffness of the airway extracellular matrix drive the development of airway hyperreactivity in Asthma?
 Centre for Heart Lung Innovation seminar series, St. Paul's Hospital, University of British Columbia, Vancouver CA September 27, 2019,

- 4. *Altered intercellular communication can result in airway hyperreactivity in asthma* Biomedical Science and Engineering Seminar Series, Center for Engineering in Medicine at Massachusetts General Hospital, Boston MA. November 1, 2019
- 5. Mechanisms and Interventions to Inhibit Extracellular Matrix Driven Bronchoconstriction in Asthma. Dept. of Electrical and Biomedical Engineering, University of Vermont. November 11, 2020
- 6. *A glitch in the Matrix: the mechanobiology of airway hyperreactivity.* Molecular & Integrative Physiology Seminar Series, Harvard School of Public Health, Boston MA *February 2, 2021*
- 7. Collective agonist sensing, a new paradigm for airway closure. University of Colorado, Denver February 11, 2021
- 8. Intercellular Communication Dictates the Agonist Response of Smooth Muscle Cell Ensembles. Center for Vascular Biology Research, Beth Israel Deaconess Medical Center, Boston MA Friday, April 9 2021
- 8. Mechanobiology of the airway smooth muscle and its implications for Asthma therapy. Dept of Biomedical Engineering, University of Iowa. September 28, 2021
- Collective agonist sensing in smooth muscle ensembles
 <u>"Mechanobiology Rising Star Faculty talk"</u> Center for Mechanobiology, Boston
 University, November 5, 2021.
- 10. Calcium oscillations coordinate collective contractions of the smooth muscle City College of New York, NY, Feb 23, 2022
- 11. Mechanobiology of the smooth muscle contractions in asthma McGill University, Montreal, Canada, March 11, 2022

CITATION REPORT from Google Scholar (updated 6/26/2022)

◆ **Total Publications:** 43 peer reviewed Journal articles and 1 book chapter. (9 since starting at Northeastern)

PUBLICATIONS

PEER REVIEWED JOURNAL ARTICLES

<u>2021</u>

 Stiffening of the Extracellular Matrix is a Sufficient Condition for Airway Hyperreactivity. R.R Jamieson, S.E Stasiak, S. R. Polio, C McCormick, R.D Auspsburg, J.W Ruberti, and H. Parameswaran Journal of Applied Physiology. March 2021.

[This article was chosen for <u>APS select</u>, the American Physiological Society's collection of best physiology papers]

Complexity holds the key to understanding airway hyperreactivity in asthma
 H. Parameswaran Journal of Applied Physiology 2021 131:6, 1842-1848 [invited response to perspective article on asthma research]

<u>2020</u>

- 3. Intercellular communication controls agonist-induced calcium oscillations independently of gap junctions in smooth muscle cells. S.E Stasiak, R.R Jamieson, J. Bouffard, E.J. Cram and **H. Parameswaran** Science Advances. August 5, 2020.
- Intercellular adhesion stiffness moderates cell decoupling as a function of substrate stiffness D. A. Vargas*, T. Heck, B. Smeets, H. Ramon, H. Parameswaran and H. Van Oosterwyck Biophysical Journal. July 2020, 119(2):243-257

* First author was a visiting scholar in my lab during the summer of 2018

<u>2019</u>

5. Extracellular Matrix regulates force transmission pathways in multicellular ensembles of human airway smooth muscle cells. S.R Polio, S.E Stasiak, R Krishnan and **H. Parameswaran**_Sci Rep. 2019 July 2;9(1):9564.

- 6. CT Imaging-Based Low-Attenuation Super Clusters in Three Dimensions and the Progression of Emphysema. Mondoñedo JR*, Sato S, Oguma T, Muro S, Sonnenberg AH, Zeldich D, **H. Parameswaran**, Hirai T, Suki B. Chest. 2019 Jan;155(1):79-87.
- * First author was a advised by HP as a Ph.D thesis committee member.

<u>2018</u>

- The Digestive Protease Role for Cela1 in Postnatal Lung Matrix Remodeling and AAT-Deficient Emphysema R. Joshi, A. Heinz, Q Fan, S Guo, B Monia, C.E.H. Schmelzer, A.S. Weiss, M.Batie, H. Parameswaran, B.M.Varisco. Am J Respir Cell Mol Biol. 2018 Aug;59(2):167-178.
- 8. Blood pressure-induced physiological strain variability modulates wall structure and function in aorta rings. Imsirovic J, Bartolák-Suki E, Jawde SB, **Parameswaran H**, Suki B Physiol Meas. 2018 October 30;39(10):105014.

2017

9. Assessing Structure-Function Relations in Mice Using the Forced Oscillation Technique and Quantitative Histology. **H Parameswaran** and B. Suki Methods Mol Biol. 2017;1639:77-91. [Book Chapter]

<u>2016</u>

- Regulatory Roles of Fluctuation-Driven Mechanotransduction in Cell Function. Suki B, Parameswaran H, Imsirovic J, Bartolák-Suki E. Physiology (Bethesda). 2016 Sep;31(5):346-58
- 11. Mitochondrial iron chelation ameliorates cigarette smoke-induced bronchitis and emphysema in mice M Cloonan, K.Glass, A.R. Bhashyam, M.E Laucho-Contreras, M. Cervo, M.A Pabon, C. Konrad, F. Polverino, K. Miziumura, M. Ghosh, **H. Parameswaran**, N.M Williams, K.T. Rooney, Z.H Chen, M.P. Goldklang, G.Yuan, S.C Moore, D.L. Demeo, T.A. Rouault, J.M. D'Armiento, E.A Schon, G. Manfredi, J. Quackenbush, A. Mahmood, Edwin .K. Silverman, C.A. Owen and Augustine M. Choi. Nature Medicine 22, 163–174 (2016)
- 12. Mechanical forces accelerate collagen digestion by bacterial collagenase in lung tissue strips. E.Yi, S. Sato, A Takahashi, **H. Parameswaran**, TA Blute, E.B.Suki, B Suki Front. Physiol., (2016)

<u>2015</u>

- 13. Linking ventilation heterogeneity quantified via hyperpolarized 3He MRI to dynamic lung mechanics and airway hyperresponsiveness J.Liu, **H. Parameswaran**, M.S. Albert, K.R. Lutchen PLoS ONE 10(11): e0142738.
- 14. Can Breathing-Like Pressure Oscillations Reverse or Prevent Narrowing of Small Intact Airways? B. Harvey, **H. Parameswaran** and K.R. Lutchen J. Appl. Physiol. 2015.
- 15. Scale Dependence of Structure-Function Relationship in the Emphysematous Mouse Lung S. Sato, E.B. Suki, **H. Parameswaran**, H. Hamakawa and B. Suki Front. Physiol. 6:146. 2015.
- 16. Fluctuation-driven mechanotransduction regulates mitochondrial-network structure and function E.B.Suki, J. Imsirovic, H. Parameswaran, T. Wellman, N Martinez, P.G. Allen, U. Frey and B. Suki. Nature Materials. 2015 July 27
- Lung structure and function in elastase-treated rats: A follow-up study. M.V. Szabari, J. Tolnai, B.A. Maár, H. Parameswaran, E. Bartolák-Suki, B. Suki and Z. Hantos. Respir Physiol Neurobiol. 2015.

<u>2014</u>

- 18. A computational model of the response of adherent cells to stretch and changes in substrate stiffness H. Parameswaran, K.R. Lutchen and B. Suki J. Appl. Physiol. 116: 825-34, 2014.
- 19. Topographical control of multiple cell adhesion molecules for traction force microscopy S.R. Polio, **H. Parameswaran**, E.P. Canovic, D. Stamenovic, M.L. Smith Integrative Biology 6(3): 357-65, 2014
- Proteoglycans maintain lung stability in an elastase-treated mouse model of emphysema.
 A. Takahashi, A. Majumdar, H. Parameswaran, E.B. Suki and B Suki. Am. J. Respir. Cell Mol. Biol. 51(1): 26-33, 2014
- 21. Computational modeling helps uncover mechanisms related to the progression of emphysema. B. Suki and **H. Parameswaran** Drug Discov. Today 70(27-28): 4245-4249, 2014
- 22. JNK suppresses pulmonary fibroblast elastogenesis during alveolar development. S. Liu, **H. Parameswaran**, S.M. Young and B. Varisco. Resp. Res. 15: 34, 2014

<u>2013</u>

- 23. Semiautomatic segmentation of ventilated airspaces in healthy and asthmatic subjects using hyperpolarized (3)He MRI. J.K. Lui, A.S. Laprad, **H. Parameswaran**, Y. Sun, M.S. Albert and K.R. Lutchen. Comput. Math. Methods. Med. March 31 2013.
- 24. Can Tidal Breathing with Deep Inspirations of Intact Airways Create Sustained Bronchoprotection or Bronchodilation? B. Harvey, **H. Parameswaran**, K.R. Lutchen J. Appl Physiol. May 30 2013.
- 25. Emphysema and Mechanical Stress-induced Lung Remodeling B. Suki, S. Sato, **H. Parameswaran**, M.V. Szabari, A. Takahashi, and E.B. Suki. Physiology June 2013.

<u>2012</u>

- 26. Acute mechanical forces cause deterioration in lung structure and function in elastaseinduced emphysema. M.V. Szabari, **H. Parameswaran**, S. Sato, Z. Hantos, E.B. Suki and B. Suki. Am J Physiol Lung Cell Mol Physiol. Oct 2012
- 27. Functional and morphological assessment of early impairment of airway function in a rat model of emphysema. J. Tolnai, M.V. Szabari, G. Albu, B. Maar, **H. Parameswaran**, E.B. Suki, B. Suki and Z Hantos. J. Appl. Physiol. Jun 2012
- 28. Jamming dynamics of stretch-induced surfactant release by alveolar type II cells. A. Majumdar, S.P. Arold, E. B. Suki, **H. Parameswaran**, and B. Suki J. Appl. Physiol, Oct 2011.

<u>2011</u>

- 29. Linking Microscopic Patterns of Tissue Destruction in Emphysema to Macroscopic Stiffness Decline using a Three-Dimensional Computational Model. **H. Parameswaran**, A. Majumdar and B. Suki. PLoS Computational Biol. 7(4), April 2011.
- 30. Dynamics of Enzymatic Digestion of Elastic Fibers and Networks under Tension. A. Araujo, A. Majumdar, H. Parameswaran, E. Yi, J. Spencer, M. Nugent and B. Suki. Proc. Natl. Acad. Sci. USA. May 2011.
- 31. Structure-function relations in an elastase-induced mouse model of emphysema H. Hamakawa, E.B. Suki, H. Parameswaran, A. Majumdar, K. Lutchen, B. Suki. Am. J. Respir. Cell Mol. Biol. Sept. 2011 [HP's work was featured on the cover]



- 32. Microtubule dynamics regulate cyclic stretch- induced cell alignment in human airway smooth muscle cells, M.Morioka*, **H. Parameswaran*** K. Naruse, M. Kondo, M. Sokabe, Y. Hasegawa, B. Suki, and S. Ito PLoS-ONE 6(10), October 2011.(* **Equal Contribution**)
- Mechanical failure, Stress Redistribution, Elastase Activity and Binding Site Availability on Elastin During the Progression of Emphysema. B. Suki, R. Jesudason, S. Sato, H. Parameswaran, A.D. Araujo, A. Majumdar, P.G. Allen, E. Bartolak-Suki Pulm. Pharmacol. Ther. April 2011.

<u>2010</u>

- 34. Mechanical forces regulate elastase activity and Binding site availability in lung elastin, R. Jesudason, S. Sato, **H. Parameswaran**, A.D. Araujo, A. Majumdar, P.G. Allen, E.B. Suki and B. Suki. Biophys. J. 99(9): 3076-83, 2010.
- 35. Autophagy protein LC3B activates extrinsic apoptosis during cigarette-smoke induced emphysema. Z. Chen, H. Lam, Y. Jin, HH. Kim, J. Cao, S. Lee, E. Ifedigbo, **H. Parameswaran**, S. Ryter and A. Choi. Proc. Natl. Acad. Sci USA. 107(44): 18880-5, 2010.

<u>2009</u>

- 36. Three-dimensional measurement of alveolar airspace volumes in normal and emphysematous lungs using micro-CT, **H. Parameswaran**, E.B. Suki, H. Hamakawa, A. Majumdar, P. Allen, B. Suki, J. Appl. Physiol. 107(2): 583-592, 2009.
- 37. Estimating the diameter of airways susceptible for collapse using crackle sound, A. Majumdar, Z. Hantos, J. Tolnai, **H. Parameswaran**, R. Tepper, and B. Suki. J. Appl. Physiol.,107(5):1504-12, 2009.

<u>2008-2004</u>

- 38. Quantitative characterization of airspace enlargement in emphysema. **H. Parameswaran**, A. Majumdar, S. Ito, A. M. Alencar, and B. Suki. J. Appl. Physiol. 100: 186-193, 2006.
- 39. Morphological quantification of emphysema: A debate **H. Parameswaran**, A. Majumdar, S. Ito, A. M. Alencar, and B. Suki. J. Appl. Physiol. 100(4):1420-1421, 2006.
- 40. Pattern of parenchymal destruction determines lung function decline. **H. Parameswaran**, A Majumdar, H. Hamakawa, and B. Suki. J. Appl. Physiol. 105(6):1984-1984, 2008.

- 41. Alveolar macrophage activation and an emphysema like phenotype in adiponectin deficient mice. R. Summer, F. Little, N. Ouchi, Y. Takemura, T. Aprahamian, D. Dwyer, K. Fitzsimmons, B. Suki, **H. Parameswaran**, A. Fine, K. Walsh. Am. J. Physiol.: Lung Cell Mol. Physiol. 294: L1035-L1042, 2008.
- 42. Early emphysema in the tight skin and the pallid mice: roles of microfibril associated glycoprotein, collagen and mechanical forces. S. Ito, E.B. Suki, J.M. Shipley, **H. Parameswaran**, A. Majumdar, B. Suki. Am. J. Respir. Cell Mol. Biol. 34(6):688-694, 2006.
- 43. Mechanics, nonlinearity, and failure strength of lung tissue in a mouse model of emphysema: possible role of collagen remodeling. S. Ito, E.P. Ingenito, K.K. Brewer, L.D. Black, **H. Parameswaran**, K.R. Lutchen, B. Suki. J. Appl. Physiol. 98: 503-511, 2005.
- 44. Tissue heterogeneity in the mouse lung: effects of elastase treatment. S. Ito, E.P. Ingenito, S. P. Arold, H. Parameswaran, N. T. Tgavalekos, K. R. Lutchen, and B. Suki. J. Appl. Physiol. 97: 204-212, 2004.

Conference Presentations

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