

JASON H. YANG

Research Scientist

MIT / Broad Institute
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RESEARCH INTERESTS

- systems biology
- network modeling
- machine learning
- infectious disease
- tuberculosis

My lab develops systems approaches for revealing causal mechanisms in disease pathology, therapeutic efficacy and cellular physiology.

Academic Positions

2019 – Present Assistant Professor and Chancellor's Scholar, Microbiology, Biochemistry and Molecular Genetics Center for Emerging and Re-Emerging Pathogens
[Rutgers University, New Jersey Medical School](#)

Education and Training

2014 – 2019 Postdoctoral Training, Biological Engineering Institute for Medical Engineering and Science
[Massachusetts Institute of Technology](#)
Infectious Disease and Microbiome Program
[Broad Institute at MIT and Harvard](#)
Advisor: *James J. Collins, Ph.D.*

2012 – 2014 Postdoctoral Training, Biomedical Engineering
[Boston University](#)
Advisor: *James J. Collins, Ph.D.*

2006 – 2012 Ph.D., Biomedical Engineering
Robert M. Berne Cardiovascular Research Center
[University of Virginia](#)
Advisor: *Jeffrey J. Saucerman, Ph.D.*

2000 – 2005 B.S., Biomedical Engineering,
2nd Major in Electrical Engineering
[Johns Hopkins University](#)

Other Academic Research Experiences

2003 – 2006 Lab Technician, Biomedical Engineering Institute for Computational Medicine
[Johns Hopkins University](#)
Advisor: *Raimond L. Winslow, Ph.D.*

2003 – 2004 Research Assistant, Biomedical Engineering
[Johns Hopkins University](#)
Advisor: *Robert H. Allen, Ph.D.*

2002 Research Assistant, Radiology
[Johns Hopkins Medical Institutes](#)
Advisor: *Ergin Atalar, Ph.D.*

Other Professional Work Experiences

2019 Venture Creation Fellow
[Flagship Pioneering](#)

2011 Visiting Scholar, Discovery Sciences
[AstraZeneca PLC](#)
Advisor: *Jane McPheat, Ph.D.*

2001 Intern, Communications
[American Cancer Society](#)

Professional Affiliations

2014 – Present	American Society for Microbiology
2010 – Present	American Society for Engineering Education
2007 – Present	American Association for the Advancement of Science
2006 – Present	American Heart Association
2004 – Present	Biomedical Engineering Society

Competitive Funding

Awards as Principal Investigator

K99 GM118907 NIH / NIGMS	<i>Effects of Host Metabolic Variation on Antibiotic Susceptibility (PI: Yang JH)</i> role: principal investigator	2016 – 2021	\$927,000
0715283U American Heart Association	<i>Systems Analysis of CREB Activation (PI: Yang JH)</i> Predoctoral Fellowship role: principal investigator	2007 – 2009	\$40,000

Awards as Trainee

T32 GM08715 NIH / NIGMS	<i>Biotechnology Training Program (PI: Laurie GW)</i> role: trainee	2009 – 2011	\$42,156
T32 HL007284 NIH / NHLBI	<i>Basic Cardiovascular Research Training Program (PI: Duling BR)</i> role: trainee	2007	declined

Awards as Author / Co-author

6230196 Broad Institute at MIT and Harvard	<i>Turning the Tide on Tuberculosis: Metabolic Pathways Underlying MTB Antibiotic Susceptibility (PI: Collins JJ)</i> role: author	2016 – 2018	\$520,000
U19 AI111276 NIH / NIAID	<i>Biomarkers and Mechanisms of Paucibacillary and Latent Tuberculosis, Project 4: Bacterial Mechanisms and Host Pharmacokinetic. Factors that Determine Persistence in Paucibacillary TB (PIs: Ellner JJ, Alland D, Salgama P)</i> role: co-author	2014 – 2021	\$1,086,119

Peer-Reviewed Publications (* denotes equal contribution; h-index: 12)

Google Scholar: <https://scholar.google.com/citations?user=c6WH6Q8AAAAJ&hl=en>

Published Manuscripts

- Lopatkin AJ, Stokes JM, Zheng EJ, **Yang JH**, Takahashi MK, You L, Collins JJ. Bacterial metabolic state more accurately predicts antibiotic lethality than growth rate. *Nat Microbiol.* 2019; 4(12):2109-2117.
- Yang JH**, Wright SN*, Hamblin MI*, McCloskey D, Alcantar MA, Schrübbers L, Lopatkin AJ, Satish S, Nili A, Palsson BO, Walker GC, Collins JJ. A white-box machine learning approach for revealing antibiotic mechanisms of action. *Cell.* 2019; 177:1649-1661.
- Yang JH***, Bhargava P*, McCloskey D, Mao N, Palsson BO, Collins JJ. Antibiotic-induced changes to the host metabolic environment inhibit drug efficacy and alter immune function. *Cell Host Microbe.* 2017; 22(6):757-765.
- Yang JH***, Bening SC*, Collins JJ. Antibiotic efficacy – context matters. *Curr Opin Microbiol.* 2017; 39:73-80.
- Takahashi N*, Gruber CC*, **Yang JH**, Liu X, Braff D, Yashaswini C, Bhubhani S, Furuta Y, Andreescu S, Collins JJ, Walker GC. Lethality of MalE-LacZ hybrid protein shares mechanistic

- attributes with oxidative component of antibiotic lethality. [Proc Natl Acad Sci U S A](#). 2017; 114(34):9164-9169.
6. Meylan S, Porter CB*, **Yang JH***, Belenky P, Gutierrez A, Lobritz MA, Park J, Kim S, Moskowicz S, Collins JJ. Carbon sources tune antibiotic susceptibility in *Pseudomonas aeruginosa* via Tricarboxylic acid cycle control. [Cell Chem Biol](#). 2017; 24(2):195-206.
 7. Lobritz MA*, Belenky P*, Porter CBM, Gutierrez A, **Yang JH**, Schwarz EG, Dwyer DJ, Khalil AS, Collins JJ. Antibiotic efficacy is linked to bacterial cellular respiration. [Proc Natl Acad Sci U S A](#). 2015; 112(27):8173-80.
 8. Dwyer DJ*, Belenky PA*, **Yang JH***, MacDonald IC, Martell JD, Takahashi N, Chan CTY, Lobritz MA, Braff D, Schwarz EG, Ye JD, Pati M, Vercruyssen M, Ralifo PS, Allison KR, Khalil AS, Ting AY, Walker GC, Collins JJ. Antibiotics induce redox-related physiological alterations as part of their cytotoxicity. [Proc Natl Acad Sci U S A](#). 2014; 111(20):E2100-9.
 9. **Yang JH**, Polanowska-Grabowska RK, Smith JS, Shields CW, Saucerman JJ. PKA catalytic subunit compartmentation regulates contractile and hypertrophic responses to β -adrenergic signaling. [J Mol Cell Cardiol](#). 2014; 66:83-93.
 10. **Yang JH**, Saucerman JJ. Phospholemman is a negative feed-forward regulator of Ca^{2+} in β -adrenergic signaling, accelerating β -adrenergic inotropy. [J Mol Cell Cardiol](#). 2012; 52(5):1048-55.
 11. Sample V*, DiPilato LM*, **Yang JH***, Ni Q, Saucerman JJ, Zhang J. Regulation of nuclear PKA revealed by spatiotemporal manipulation of cAMP. [Nat Chem Biol](#). 2012; 8(4):375-82.
 12. **Yang JH**, Saucerman JJ. Computational models reduce complexity and accelerate insight into cardiac signaling networks. [Circ Res](#). 2011; 108(01):85-97.
 13. Benedict KF, Mac Gabhann F*, Amanfu RK*, Chavali AK*, Gianchandani EP*, Glaw LS*, Oberhardt MA*, Thorne BC*, **Yang JH***, Papin JA, Peirce SM, Saucerman JJ, Skalak TC. Systems analysis of bounded signaling modules generates experimental roadmap for eight major diseases. [Ann Biomed Eng](#). 2011; 39(2):621-35.
 14. Gurewitsch ED, Kim EJ, **Yang JH**, Outland KE, McDonald MK, Allen RH. Comparing McRoberts' and Rubin's maneuvers for initial management of shoulder dystocia: An objective evaluation. [Am J Obstet Gynecol](#). 2005; 192(1):153-160.

Manuscripts in Preparation

1. **Yang JH***, Hamblin MI*, Wright SN, Gengenbacher M, Ranu NS, Sebastian J, Elacqua JJ, Alland D, Blainey PC, Dartois V, Collins JJ. Respiratory chain inhibitors exert diverse effects on isoniazid lethality in *M. tuberculosis*.

Peer-Reviewed Conference Proceedings

1. **Yang JH**, Saucerman JJ. Multi-scale model of phospholamban mutations in the mouse heart. [2nd International Symposium on Bio- and Medical Informatics and Cybernetics](#). 2008.
2. Kim EJ, Allen RH, **Yang JH**, McDonald MK, Tam W, Gurewitsch ED. Simulating complicated human birth for research and training. [Conf Proc IEEE Eng Med Biol Soc](#). 2004; 4:2762-6.

Published Abstracts

1. **Yang J**, Saucerman JJ. Nuclear PKA Compartmentation Manages Hypertrophic Responses to β -Adrenergic Signaling. [Circ Res](#). 2011; 109(S1):AP203.
2. **Yang J**, Saucerman JJ. PKA Activity Compartmentation Requires Slow Nuclear Transport Kinetics in Cardiac Myocytes. [FASEB J](#). 2008; 22(S2):312.
3. Gurewitsch E, Kim E, **Yang J**, Outland K, Allen R. An objective evaluation of McRoberts' and Rubin's maneuvers for shoulder dystocia. [Am J Obstet Gynecol](#). 2003; 189(6):S208.

Letters

1. **Yang J**. Science Careers: Where does advocacy fit? [Science](#). 2009; 323(5911):208-209.

Patents

Provisional Patents

1. **Yang JH**, Collins JJ, Alcantar MA, Bhattacharyya RP. Potentiators of antimicrobial agents. 2019; *Provisional patent application submitted on May 8, 2019.*
2. Bashor CJ, **Yang JH**, Gutierrez A, Ahn WS, Collins JJ, Wong BG, Khalil AS. Methods for experimental evolution of natural and synthetic microbes using a custom, high-throughput continuous culture system. 2017; Application 62/460,121.

Teaching

Lecturer / Instructor

- 2014 – 2018 *GMS PM 802: Systems Pharmacology and Therapeutics II*
Pharmacology, [Boston University Medical Center](#)
- 2009 – 2011 *August Teaching Workshop: Various Workshops*
Teaching Resource Center, [University of Virginia](#)
- 2010 *BIMS 8064: Special Topics in Cardiovascular Research*
Robert M. Berne Cardiovascular Research Center, [University of Virginia](#)
- 2010 *Tomorrow's Professors Today Pedagogy Seminar*
Teaching Resource Center, [University of Virginia](#)
- 2009 *BME 4063: BME Capstone Design*
Biomedical Engineering, [University of Virginia](#)

Guest Lecturer

- 2013 *HHMI Summer Program*
Biomedical Engineering, [HHMI](#), [Boston University](#)
- 2009 *BME 3310: BME Systems Analysis*
Biomedical Engineering, [University of Virginia](#)

Teaching Assistant

- 2009 *BME 3315: Computational Biomedical Engineering*
Biomedical Engineering, [University of Virginia](#)
- 2008 *BME 4417: Tissue Engineering*
Biomedical Engineering, [University of Virginia](#)

Teaching Development Programs

- 2008 – 2010 *Tomorrow's Professor Today*
Teaching Resource Center, [University of Virginia](#)

Seminars / Invited Talks

- Oct. 29, 2019 *A White-Box Machine Learning Approach for Revealing Molecular Mechanisms*
Machine Learning Journal Club, [University of Colorado Anschutz Medical Campus](#)
- Oct. 21, 2019 *Machine Learning Approaches for Antibiotic Mechanism of Action and Discovery*
CLEAR-TB Tuberculosis Research Unit, [Rutgers New Jersey Medical School](#)
- Aug. 5, 2019 *A White-Box Machine Learning Approach for Revealing Pathway Mechanisms*
Allen Discovery Center, [Tufts University](#)
- July 25, 2019 *Machine Learning Insights into Antibiotic Lethality*
Faculty Forum Online, [Massachusetts Institute of Technology](#)
- July 2, 2019 *A White-Box Machine Learning Approach for Revealing Pathway Mechanisms*
Markus W. Covert Lab, [Stanford University](#)
- June 13, 2019 *White-Box Machine Learning Insights into Antibiotic Lethality*
[Rutgers New Jersey Medical School](#)

- May 25, 2019 *A White-Box Machine Learning Approach for Revealing Pathway Mechanisms*
Institute for Systems Biology
- Apr. 9, 2019 *Electron transport chain inhibitors elicit diverse long-term lethality phenotypes in combination treatment with isoniazid in M. tuberculosis*
TBRU-N Annual Meeting, National Institute of Allergy and Infectious Diseases
- Feb. 25, 2019 *A White-Box Machine Learning Approach for Revealing Molecular Mechanisms*
Computational Medicine Program, University of North Carolina, Chapel Hill
- Feb. 19, 2019 *A White-Box Machine Learning Approach for Revealing Molecular Mechanisms*
Department of Biomedical Engineering, University of Connecticut
- Feb. 7, 2019 *White-Box Machine Learning Approaches for Revealing Causal Molecular Mechanisms*
Eric J. Alm Lab, Massachusetts Institute of Technology
- Feb. 6, 2019 *A White-Box Machine Learning Approach for Revealing Molecular Mechanisms*
Department of Biomedical Engineering, Ohio State University
- Dec. 6, 2018 *White-Box Machine Learning Insights into Antibiotic Lethality*
Department of Microbiology and Immunology, Louisiana State University, Shreveport
- Nov. 7, 2018 *Electron Transport Inhibitors Exert Diverse Effects on Isoniazid Lethality*
CLEAR-TB Tuberculosis Research Unit, Boston University Medical Center
- Sept. 24, 2018 *White-Box Machine Learning Insights into Antibiotic Lethality*
Center for Infectious Disease Research
- May 30, 2018 *White-Box Machine Learning Insights into Antibiotic Lethality*
Infectious Diseases Consortium, Harvard Medical School
- Mar. 12, 2018 *Model-Driven Learning Reveals Participation of Nucleotide Metabolism in Antibiotic Lethality*
Cell Circuits and Epigenetics Program, Broad Institute at MIT and Harvard
- Feb. 23, 2018 *Systems Approaches for Understanding Antimicrobial Efficacy*
Department of Bioengineering, University of California, Berkeley
- Feb. 5, 2018 *Systems Approaches for Understanding Antimicrobial Efficacy*
Department of Biomedical Engineering, University of Wisconsin, Madison
- Dec. 13, 2017 *Systems Insights into Isoniazid Efficacy*
Public Health Research Institute, Rutgers New Jersey Medical School
- Dec. 7, 2017 *Systems Insights into Isoniazid Efficacy*
Infectious Disease Therapeutics Working Group, Broad Institute at MIT and Harvard
- Oct. 5, 2017 *Systems Insights into Isoniazid Efficacy*
Boston TB Meeting, Harvard School of Public Health
- Sept. 8, 2017 *Context-Dependence in Antibiotic Susceptibility*
Eric D. Brown Lab, McMaster University
- Feb. 10, 2017 *Context-Dependence in Antibiotic Susceptibility*
Computational Biosciences Program, University of Colorado Anschutz Medical Campus
- Jan. 27, 2017 *Context-Dependence in Antibiotic Susceptibility*
Department of Biomedical Engineering, Duke University
- Sept. 9, 2016 *Context-Dependence in Antibiotic Susceptibility*
Infectious Disease and Microbiome Program, Broad Institute at MIT and Harvard
- Aug. 22, 2016 *Antibiotic-Induced Changes in Host Metabolism Alter Antibiotic Susceptibility and Immune Cell Function*
Biotechnology Training Program, University of Virginia
- Mar. 3, 2016 *Metabolic Pathways Underlying Antibiotic Tolerance and Susceptibility*
Chemical Biology and Therapeutic Sciences, Broad Institute at MIT and Harvard
- Aug. 25, 2015 *Towards Precision Medicine for Infectious Disease*
Jin Zhang Lab, University of California, San Diego
- May 25, 2015 *Metabolic Mechanisms of Action in Antibiotic Killing*
Biology Department, Massachusetts Institute of Technology
- Sept 3, 2014 *Metabolically Re-modeling Antibiotic Susceptibility*
Ahmad S. Khalil Lab, Boston University

Oct 11, 2013	<i>Metabolic Responses to Antibiotic Stress</i> Biotechnology Training Program, University of Virginia
Oct 10, 2013	<i>β-Adrenergic Signaling Compartmentation in Cardiac Myocytes</i> Robert M. Berne Cardiovascular Research Center, University of Virginia
May 8, 2013	<i>Metabolic Responses to Antibiotic Stress</i> Uri Alon Lab, Weizmann Institute of Science
May 6, 2013	<i>Metabolic Responses to Antibiotic Stress</i> Computational Systems Biology, Tel Aviv University
June 6, 2012	<i>Systems Analysis of Cardiac β-Adrenergic Signaling Regulation</i> Wyss Institute for Biologically Inspired Engineering

Platform Presentations (* denotes equal contribution)

- Lopatkin AJ, Stokes JM, **Yang JH**, Zhang E, Takahashi, You L, Collins JJ. Antibiotic Lethality Depends Directly on Metabolic State. [2019 qBio Conference](#). 2019.
- Yang JH**, Wright SN, Hamblin MI, Collins JJ. Eradicating *M. tuberculosis* Persists. [2017 Annual Fall Meeting of the Biomedical Engineering Society](#). 2017.
- Yang JH**, Wright SN, Hamblin M, Collins JJ. Systems Analysis Identifies Metabolic Components to Antibiotic Susceptibility and Tolerance. [Boston Bacterial Meeting 2017](#). 2017.
- Yang JH**, Bhargava P, McCloskey D, Palsson BØ, Collins JJ. Antibiotic-Induced Changes in Host Metabolism Alter Antibiotic Susceptibility and Immune Cell Function. [2016 Annual Fall Meeting of the Biomedical Engineering Society](#). 2016.
- Yang JH**, Wright SN, Collins JJ. Systems Analysis Identifies Metabolic Components to Antibiotic Susceptibility and Tolerance. [2016 Annual Fall Meeting of the Biomedical Engineering Society](#). 2016.
- Yang JH**, Bhargava P, McCloskey D, Palsson BØ, Collins JJ. Antibiotic-Induced Host Metabolites Alter Antibiotic Susceptibility. [Microbial Stress Response, Gordon Research Seminar](#). 2016.
- Yang JH**, Yizhak K, Satish S, Ruppin E, Collins JJ. Metabolically Re-modeling Antibiotic Sensitivity. [3rd Conference on Constraint-Based Reconstruction and Analysis](#). 2014.
- Yang JH**, Saucerman JJ. PKA catalytic subunit compartmentation regulates contractile and hypertrophic responses to β -adrenergic signaling. [Cardiac Regulatory Mechanisms, Gordon Research Seminar](#). 2012.
- Yang JH**, Saucerman JJ. Phospholemman is a negative feed-forward regulator of Ca^{2+} in β -adrenergic signaling, accelerating β -adrenergic inotropy. [90th Annual Meeting of the Virginia Academy of Science](#). 2012.
- Yang JH**, Saucerman JJ. Spatial Compartmentation of PKA Activity Regulates Contractility and Hypertrophy in Cardiac Myocytes. [2009 Annual Fall Meeting of the Biomedical Engineering Society](#). 2009.
- Yang JH**, Saucerman JJ. Modeling Opposing Angiotensin II Receptor Subtype Behaviors in Cardiovascular Disease and Therapy. [2009 Annual Fall Meeting of the Biomedical Engineering Society](#). 2009.
- Benedict KF, MacGabhann F*, Amanfu RK*, Chavali AK*, Gianchandani EP*, Glaw LS*, Oberhardt MA*, **Yang JH***, Thorne BC, Papin JA, Peirce SM, Saucerman JJ, Skalak TC. Systems Analysis of Bounded Signaling Modules Generates Novel Insight into Eight Major Diseases. [2009 Annual Fall Meeting of the Biomedical Engineering Society](#). 2009.
- Yang JH**, Saucerman JJ. Multi-Scale Model of Phospholamban Mutations in the Mouse Heart. [2nd International Symposium on Bio- and Medical Informatics and Cybernetics](#). 2008.
- Yang JH**, Saucerman JJ. Phospholamban Mutations in the Murine Heart. [2007 Annual Fall Meeting of the Biomedical Engineering Society](#). 2007.
- Kim EJ, Allen RH, **Yang JH**, McDonald MK, Tam W, Gurewitsch ED. Simulating complicated human births for research and training. [26th Annual International Conference of the IEEE Engineering in Medicine and Biology Society](#). 2004.

Poster Presentations (* denotes equal contribution)

1. **Yang JH***, Hamblin MI*, Wright SN, Gengenbacher M, Ranu NS, Blainey PC, Dartois V, Collins JJ. Bedaquiline Both Antagonizes and Synergizes with Isoniazid in *M. Tuberculosis*. [2018 Keystone Symposia Conference: Tuberculosis: Translating Scientific Findings for Clinical and Public Health Impact](#). 2018.
2. **Yang JH**, Wright SN, Hamblin M, Lopatkin AJ, Collins JJ. White-Box Machine Learning Reveals Contribution of Purine Metabolism to Antibiotic Lethality. [Microbial Stress Response, Gordon Research Conference](#). 2018.
3. **Yang JH**, Bhargava P, McCloskey D, Palsson BØ, Collins JJ. Antibiotic-Induced Host Metabolites Alter Antibiotic Susceptibility. [Microbial Stress Response, Gordon Research Conference](#). 2016.
4. **Yang JH**, Bhargava P, McCloskey D, Palsson BØ, Collins JJ. Antibiotic-Induced Host Metabolites Alter Antibiotic Susceptibility. [Microbial Stress Response, Gordon Research Seminar](#). 2016.
5. Thorp HB, **Yang JH**, Satish S, Meylan S, Collins JJ. Optimizing Antibiotic Treatment Strategies Using Small Molecule Inhibitors of DNA Damage Repair. [2014 Annual Fall Meeting of the Biomedical Engineering Society](#). 2014.
6. **Yang JH**, Yizhak K, Ruppin E, Collins JJ. Metabolically Re-modeling Antibiotic Sensitivity. [Systems Biology of Infectious Diseases: Pathogenesis to Personalized Medicine](#). 2014.
7. **Yang JH**, Yizhak K, Ruppin E, Collins JJ. Metabolically Re-modeling Antibiotic Sensitivity. [Microbial Stress Response, Gordon Research Conference](#). 2014.
8. **Yang JH**, Yizhak K, Ruppin E, Collins JJ. Metabolically Re-modeling Antibiotic Sensitivity. [Microbial Stress Response, Gordon Research Seminar](#). 2014.
9. **Yang JH**, Yizhak K, Satish S, Ruppin E, Collins JJ. Metabolically Re-modeling Antibiotic Sensitivity. [3rd Conference on Constraint-Based Reconstruction and Analysis](#). 2014.
10. Porter CBM, Belenky PA, Dwyer DJ, **Yang JH**, Collins JJ. Omics-Constrained Models Provide Insight Into the Metabolic Action of Antibiotics. [3rd Conference on Constraint-Based Reconstruction and Analysis](#). 2014.
11. **Yang JH**, Saucerman JJ. PKA catalytic subunit compartmentation regulates contractile and hypertrophic responses to β -adrenergic signaling. [Cardiac Regulatory Mechanisms, Gordon Research Conference](#). 2012.
12. **Yang JH**, Saucerman JJ. PKA catalytic subunit compartmentation regulates contractile and hypertrophic responses to β -adrenergic signaling. [Cardiac Regulatory Mechanisms, Gordon Research Seminar](#). 2012.
13. **Yang JH**, Saucerman JJ. Understanding How Stress Causes Broken Hearts. [7th Annual Graduate Student Research Forum, Virginia Council of Graduate Schools](#). 2012.
14. **Yang JH**, Saucerman JJ. Nuclear PKA Compartmentation Manages Hypertrophic Responses to β -Adrenergic Signaling. [American Heart Association Basic Cardiovascular Sciences 2011 Scientific Sessions](#). 2011.
15. Benedict K, MacGabhann F*, Amanfu R*, Chavali A*, Gianchandani E*, Glaw L*, Oberhardt M*, Thorne B*, **Yang J***, Papin J, Peirce S, Saucerman J, Skalak T. Systems Analysis of Bounded Signaling Modules Generates Novel Insights into Eight Major Diseases. [10th International Conference on Systems Biology](#). 2009.
16. **Yang J**, Saucerman J. PKA Activity Compartmentation Requires Slow Nuclear Transport Kinetics in Cardiac Myocytes. [Experimental Biology 2008](#). 2008.
17. **Yang JH**, Helm PA, Winslow RL. *Ex vivo* 3D DTMRI of Human Myocardium. [2005 Annual Fall Meeting of the Biomedical Engineering Society](#). 2005.

Awards and Honors

2016	Travel Award, Microbial Stress Response, Gordon Research Seminar
2015	2nd Place Speed-storming Presentation, 2015 MIT Biological Engineering Retreat
2014	3rd Place Poster, Systems Biology of Infectious Diseases Conference
2013	Outstanding Predoctoral Trainee, Robert M. Berne Cardiovascular Research Center

- 2012
 - awarded to one graduate student per year from UVA's Cardiovascular Research Center[Jill E. Hungerford Biomedical Sciences Prize](#)
 - awarded to one graduate student per year across the UVA School of Medicine
- 2012 Biomedical Engineering Outstanding Graduate Student Award
- 2012 2nd Place Poster, Cardiac Regulatory Mechanisms, Gordon Research Conference
- 2012 2nd Place Oral Presentation, 2012 Robert J. Huskey Graduate Research Exhibition
- 2012 Selected Representative, Virginia Council of Graduate Schools
- 2011 Mary and Otis Updike Professional Development Award in Biomedical Engineering,
- 2011 2nd Place Poster, University of Virginia BMES Annual Graduate Student Symposium
- 2010 [All-University Graduate Teaching Assistant Award, University of Virginia](#)
 - awarded to three graduate students per year across the UVA School of Engineering
- 2010 3rd Place Oral Presentation, 2010 Robert J. Huskey Graduate Research Exhibition
- 2010 Teaching Pedagogy Seminar, Teaching Resource Center, University of Virginia
- 2007 Travel Grant, University of Virginia Office of the Vice President for Research
- 2007 Semi-Finalist, University of Virginia Engineering Research Symposium
- 2004 1st Place Student Design Competition, 26th IEEE-EMBS International Conference
- 2002 Dean's List, Johns Hopkins University
- 2000 Trustee Scholar, Johns Hopkins University
- 2000 National Merit Scholar, Lockheed-Martin
- 2000 Degree of Excellence, National Forensics League

Editorial Activities

- 2015 – Present Review Editor, [Frontiers in Physiology and Bioengineering and Biotechnology](#)
- 2011 – Present Ad Hoc Reviewer, [Mathematical Biosciences](#), [Journal of Experimental Microbiology and Immunology](#), [Journal of Biological Engineering](#), [Journal of Antimicrobial Chemotherapy](#)

Leadership Activities

- 2017 – Present Vice President, Executive Board, [Boston Rugby Football Club](#)
- 2016 – 2017 Co-chair, Faculty/Clinician Seminars, [MIT Microbiome Club](#)
- 2015 Session chair, [2015 Boston Area Antibiotic Resistance Network Meeting](#)
- 2010 – 2011 Co-chair, [2011 University of Virginia Biotechnology Training Program Symposium](#)
- 2009 – 2011 Secretary, Executive Committee, [Virginia Rugby Football Club](#)
- 2009 – 2010 Journal Club Organizer, [University of Virginia Center for Systems Bioengineering](#)

Service

- 2018 Ad Hoc Review Panelist, [National Science Foundation](#)
- 2015 – 2018 NextGen Association, [Broad Institute at MIT and Harvard](#)
- 2015 Individual Development Plan Working Group, [Broad Institute at MIT and Harvard](#)
- 2013 Judge, [2013 AAAS Annual Meeting Student Poster Competition](#)
- 2012 Admissions Committee, [University of Virginia Biotechnology Training Program](#)
- 2008 All-University Retreat on Research, Science and Technology, [University of Virginia](#)
- 2007 6th Annual FRET Microscopy Workshop, [W.M. Keck Center for Cellular Imaging](#)

Science Policy

- 2013 Project Manager, Emerging Leaders in Science and Society Program, [American Association for the Advancement of Science](#)
- 2011 Invited Participant, Workshop on Advocacy in Science, [American Association for the Advancement of Science](#)

2009 Congressional Advocate, 4th Annual Council of Societies Federal Symposium, [American Institute for Medical and Biological Engineering](#)

Outreach

2017 – 2018 Invited Speaker, Minority Introduction to Engineering and Sciences Program, [Broad Institute at MIT and Harvard](#)

2017 Panelist, [MIT Graduate Student Council Postdoc Career Panel](#)

2016 – 2017 Broad Institute Mentoring Program, [Broad Institute at MIT and Harvard](#)

2016 Panelist, [UVA Future of Systems Biology and Industry Panel](#)

2015 – 2017 Invited High School Speaker, [Pioneer Charter School of Science](#)

2015 Science Fair Judge, [Massachusetts State Science and Engineering Fair](#)

2015 Volunteer Participant, [Cambridge Science Festival](#)

2015 Science Fair Judge, [Pioneer Charter School of Science](#)

2014 Invited High School Speaker, [Boston University Academy High School](#)

2012 – 2013 Reviewer, AAAS Science Books and Films, K-12 Books, [American Association for the Advancement of Science](#)

2011 Invited High School Speaker, [Century High School Science and Technology](#)

2011 Reviewer, [SPECTRA: UVA Engineering and Science Undergraduate Research Journal](#)

2010 – 2011 Science Fair Judge, [Virginia Piedmont Regional Science Fair](#)

2008 Panelist, [University of Virginia Biomedical Engineering Society Career Panel](#)

Advising / Mentorship (Affiliation; Post-Graduate Activities)

Graduate Students

2019 – Present Miguel Alcantar ([MIT](#))

2016 – 2017 Sarah Wright, M.Eng. ([MIT](#); *Leadership Development Program, AstraZeneca PLC*)

Undergraduate Students

2015 – 2016 Sarah Wright ([MIT](#); *M.Eng. Candidate, MIT*)

2015 Karinna Vivanco ([MIT](#); *Post-baccalaureate Intramural Research Training Program, NIH*)

2013 – 2014 Hallie Thorp ([Boston University](#); *Ph.D. Candidate, University of Utah*)

2013 – 2014 Amir Nili ([Boston University](#); *M.A. Candidate, Lewis & Clark*)

2013 – 2014 Sangeeta Satish ([Boston University](#); *M.S. Candidate, Boston University*)

2010 – 2011 C. Wyatt Shields, IV ([University of Virginia](#); *Ph.D. Candidate, Duke University*)

2010 – 2011 Jeffrey Smith ([University of Virginia](#); *Chemist, Merck & Co.*)

2009 – 2010 Greg Bass ([University of Virginia](#); *Ph.D. Candidate, University of Auckland*)

2007 – 2010 Anthony Soltis ([University of Virginia](#); *Ph.D. Candidate, MIT*)

2007 – 2009 Brooks Taylor ([University of Virginia](#); *Ph.D. Candidate, UC San Diego*)

2006 – 2009 Lulu Chu ([University of Virginia](#); *Ph.D. Candidate, Johns Hopkins University*)

Lab Technicians / Research Assistants

2016 – 2018 Meagan Hamblin ([Broad Institute at MIT and Harvard](#); *Ph.D. Candidate, Stanford University*)

2016 – 2017 Jordan Bryan ([Broad Institute at MIT and Harvard](#); *Ph.D. Candidate, Duke University*)

High School Students

2015 Amina Haida ([Pioneer Charter School of Science](#))

2015 Ashley Samuel ([Pioneer Charter School of Science](#))

Awards and Honors Won by Mentored Trainees

Undergraduate Students

- 2014 Hallie Thorp: Kenneth R. Lutchen Distinguished Fellowship Program
- 2011 Jeffrey Smith, C. Wyatt Shields, IV: Finalist, University of Virginia School of Engineering Undergraduate Research and Design Symposium

Lab Technicians / Research Assistants

- 2018 Meagan Hamblin: NSF Graduate Research Fellowship Program