THE FACULTY OF MEDICINE OF HARVARD UNIVERSITY
CURRICULUM VITAE

Name: **Joshua Damian Salvi**

Education:

2005 – 2009	B.S. with Honors *Summa cum laude* *Student Marshal*	Biomedical Engineering Thesis Advisors: Peter J. Butler and Henry J. Donahue	The Pennsylvania State University
2011 – 2015	Ph.D.	Biophysics and Neuroscience Thesis Advisor: James Hudspeth	The Rockefeller University
2009 – 2018	M.D. with Honors in Service	Medicine	Weill Cornell Medical College

Postdoctoral Training:

2015 – 2016	Postdoctoral Fellow	Howard Hughes Medical Institute and Laboratory of Sensory Neuroscience, James Hudspeth	The Rockefeller University

Appointments at Hospitals/Affiliated Institutions:

2018 – 2019	Internship	Department of Medicine	Massachusetts General Hospital
2018 –	Resident Physician	Department of Psychiatry	Massachusetts General Hospital and McLean Hospital

Other Professional Positions:

2016	Grass Fellow	Grass Foundation	The Marine Biological Laboratory
2014 –	Co-Founder, Partner, and Curator of Clinical Imaging	Neurodome	

Major Administrative Leadership Positions:

Local

2009 – 2011	Board Member and Insurance Chair Weill Cornell Community Clinic	Weill Cornell Medical College
2011 – 2013	Executive Director Weill Cornell Community Clinic	Weill Cornell Medical College

National

2020 –	Leadership Fellow	American Psychiatric Association

Committee Service:

Local

2018 –	Curriculum Committee	Massachusetts General Hospital and McLean Hospital

Professional Societies:

2018 –	Alpha Omega Alpha Honor Society	Member
2016 –	American Psychiatric Association	Member
2012 –	Biophysical Society	Member
2011 –	Society for Neuroscience	Member
2010 –	American Medical Association	Member

Editorial Activities:

- **Ad hoc Reviewer**
  Biophysical Journal

Honors and Prizes:

2020	APA Leadership Fellowship	American Psychiatric Association	
2018	The John Metcalf Polk Prize	Weill Cornell Medical College	Highest academic achievement in medical school
2018	The Leonard P. Tow Humanism in Medicine Award	Weill Cornell Medical College	Awarded to one medical student for humanism in medicine. Co-awarded by the Arnold P. Gold Foundation.
2018	The Richard N. Kohl Prize for Excellence in Psychiatry	Weill Cornell Medical College	Highest achievement in Psychiatry during medical school
2013	Marcus M. Reidenberg Award in Community Service	Weill Cornell Medical College	Achievement by leading an organization for community service
2009	John W. White Graduate Fellowship	The Pennsylvania State University	Academic excellence
2007, 2008	Evan Pugh Scholar	The Pennsylvania State University	Placement in the upper 0.5% of the Junior and Senior classes

Report of Funded and Unfunded Projects

Past

2013 – 2017 Investigating the hair-bundle state space in an exploration of inner-ear tuning

National Institute on Deafness and Other Communication Disorders (NIDCD)
F30 NRSA Fellowship
Grant Number: F30DC013468
Role: Principal Investigator
Major Goal: Examination of the dynamical properties of hair bundle mechanics

Unfunded Current Projects

2018 – Behavioral classification of mouse and human behavior
Investigator

2020 – Deep phenotyping in obsessive-compulsive disorder
Investigator, PI: Justin Baker, MD, PhD

Report of Local Teaching and Training

Teaching of Students in Courses:

2014 – 2016	Biological Statistics Graduate course	The Rockefeller University

Research Supervisory and Training Responsibilities:

2011 – 2016	Rotation Mentor Graduate students	The Rockefeller University
2015	Summer Science Research Program High school students	The Rockefeller University
2015 – 2016	Summer Undergraduate Research Fellowship (SURF) Program Undergraduate students	The Rockefeller University

Local Invited Presentations:

☒ *No presentations below were sponsored by 3rd parties/outside entities*

☐ *Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

2017 Health and Medical Data Science, Workshop Leader
Future of Care Annual Conference
Weill Cornell Medical College and The Rockefeller University

Report of Regional, National and International Invited Teaching and Presentations

☒ *No presentations below were sponsored by 3rd parties/outside entities*
☐ *Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

International

2016	Kinocilia actively augment mechanosensation by the lateral-line system Brain and Spine Institute (Institut du Cerveau et de la Moelle epinere, ICM) Invited Presentation

Report of Clinical Activities and Innovations

Current Licensure and Certification:

2018 –	Massachusetts Limited License (275981)

Practice Activities:

2018 –	Residency	Massachusetts General Hospital and McLean Hospital	Inpatient and Outpatient

Report of Scholarship

Peer-Reviewed Scholarship in print or other media:

Research Investigations

**** Senior author***

Salvi J. Calculated Decisions: Columbia-Suicide Severity Rating Scale (C-SSRS). Emerg Med Pract. 2019 May 1 21(5):CD3-4. PMID 31039299.

Salvi JD, Iqbal M, Kotbi N, and Francois D. Successful use of electroconvulsive therapy in the setting of lattice degeneration of the retina. Primary Care Companion for CNS Disorders. 2018 Apr 5 20(2):17l02190. PMID 29659212.

Milewski AR, O'Maoileidigh D, **Salvi JD**, and Hudspeth AJ. Homeostatic enhancement of sensory transduction. Proceedings of the National Academy of Sciences of the United States of America. 2017 Aug 15 114(33):E6794-E6803. doi: 10.1073/pnas.1706242114. PMID 28760949. PMCID 5565450.

Gneveda KS, Jacobo AJ, **Salvi JD**, Petelski A, and Hudspeth AJ. Mechanical force restricts the growth of the murine utricle. eLife. 2017 Jul 25 6:e25681. doi: 10.7554/eLife.25681. PMID 28742024.

Azimzadeh JB and **Salvi JD***. Physiological preparation of hair cells from the sacculus of the American bullfrog (*Rana catesbeiana*). Journal of Visualized Experiments. 2017 Mar (121), e55380, doi:10.3791/55380. PMID 28362415. ***Senior author.***

Salvi JD, O'Maoileidigh D, and Hudspeth AJ. Identification of bifurcations from direct observations of noisy biological oscillators. Biophysical Journal. 2016 Aug 23 111(4):798-812. PMID 27558723.

Salvi JD, O'Maoileidigh D, Fabella B, Tobin M, and Hudspeth AJ. Control of a hair bundle's function by its mechanical load. Proceedings of the National Academy of Sciences of the United States of America. 2015 Feb 17 112(9):E1000-E1009. PMID 25691749. PMCID 4352782.

Riddle MC, Lin J, Steinman JB, **Salvi JD**, Reynolds MM, Kastor AS, Harris C, and Boutin-Foster C. Incorporating the principles of the patient-centered medical home into a student-run free clinic. Advances in Medical Education and Practice. 2014 Sept 11 5:289-297. PMID 25246814. PMCID 4166215.

Salvi JD. Graphic tobacco warning labels: an improper solution? Lung Cancer: Targets and Therapy. 2014 Jul 12:5 33-34. PMID 25558178. PMCID 4280669.

Patel SH, **Salvi JD**, O'Maoileidigh D, and Hudspeth AJ. Frequency-selective exocytosis by ribbon synapses of hair cells in the bullfrog's amphibian papilla. The Journal of Neuroscience. 2012 Sep 26;32(39) 13433-8. PMID 23015434. PMCID 3468150.

Lim JY, Loiselle AE, Lee JS, Zhang JY, **Salvi JD**, and Donahue HJ. Optimizing osteogenic potential of adult stem cells for skeletal regeneration. Journal of Orthopaedic Research. Nov; 29(11):1627-33. Epub 2011 Apr 20. PMID 21509820. PMCID 3263698.

Salvi JD, Lim JY, and Donahue HJ. Increased mechanosensitivity of cells cultured on nanotopographies. Journal of Biomechanics, 2010 Nov 16; 43(15):3058-62. Epub 2010 Sep 20. PMID 20851397. PMCID 3614341.

Salvi JD, Lim JY, and Donahue HJ. Finite element analysis of fluid flow conditions in cell culture. Tissue Engineering Part C: Methods. 2010 Aug; 16(4):661-70. PMID 19778171. PMCID 2945919.

Other peer-reviewed scholarship

**** Senior/Corresponding author***

McDowell MJ and **Salvi JD*.** Casting Light from the Shadows: Coping and Defenses Amidst a Pandemic. J Clin Psychiatry. 2020 Jun; 81(4):20com13468. PMID 32558400. ****Corresponding author.***

Proceedings of meetings or other non-peer reviewed scholarship

Salvi JD, O Maoilideigh D, Fabella B, Tobin M, and Hudspeth AJ. (2015) Characterization of Active Hair-Bundle Motility by a Mechanical-Load Clamp. In Mechanics of Hearing:

Protein to Perception, Karavitaki KD, Corey DP (eds.) American Institute of Physics, Melville, NY pp. 030005:1-5.

Milewski AR, O'Maoileidigh D, **Salvi JD**, and Hudspeth AJ. Homeostatic Enhancement of Active Mechanotransduction. In Mechanics of Hearing. In To the Ear and Back Again – Advances in Auditory Biophysics, Bergevin C, Puria S (eds.) American Institute of Physics, Melville, NY.

O'Maoileidigh D, **Salvi JD**, and Hudspeth AJ. Signal Detection by Active, Noisy Hair Bundles. In To the Ear and Back Again – Advances in Auditory Biophysics, Bergevin C, Puria S (eds.) American Institute of Physics, Melville, NY p. 060002.

Reviews, chapters, monographs and editorials

Salvi J (2019). "Psychiatric Assessment: Commonly Used Rating Scales" In J.B. Taylor, S.R. Beach, and J. Puckett (Eds.), *Pocket Psychiatry, 1st Edition.* Philadelphia, PA: Lippincott Williams & Wilkins Company.

Salvi J (2019). "Somatic Therapies: Electro" In J.B. Taylor, S.R. Beach, and J. Puckett (Eds.), *Pocket Psychiatry, 1st Edition.* Philadelphia, PA: Lippincott Williams & Wilkins Company.

Doctoral Thesis:

Salvi, Joshua D., "Mechanical Control of Sensory Hair-Bundle Function" (2015). Student Theses and Dissertations. 286. https://digitalcommons.rockefeller.edu/student_theses_and_dissertations/286

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings:

Milewski AR, O'Maoileidigh D, **Salvi JD**, and Hudspeth AJ. "Mass Loading Engenders Spontaneous Oscillation by Hair Bundles." Association for Research in Otolaryngology 41st Annual MidWinter Meeting. February 9-14, 2018. San Diego, CA.

O'Maoileidigh D, **Salvi JD**, and Hudspeth AJ. "Signal Detection by Active, Noisy Hair Bundles." Mechanics of Hearing. June 19-24, 2017. St. Catharines, ON, CA.

Milewski AR, O'Maoileidigh D, **Salvi JD**, and Hudspeth AJ. "Homeostatic Enhancement of Active Mechanotransduction." Mechanics of Hearing. June 19-24, 2017. St. Catharines, ON, CA.

Milewski AR, O'Maoileidigh D, **Salvi JD**, and Hudspeth AJ. "Homeostatic Enhancement of a Hair Bundle's Ability to Detect Sound." Association for Research in Otolaryngology 40th Annual MidWinter Meeting. February 11-15, 2017. Baltimore, MD. **Podium**.

O'Maoileidigh D, **Salvi JD**, and Hudspeth AJ. "Bifurcations of a Noisy Biological Oscillator Are Associated with Function." 2016 SIAM Conference on the Life Sciences. July 11-14, 2016. Boston, MA. **Podium**.

Milewski AR, O'Maoileidigh D, and **Salvi JD**, Fabella B, Hudspeth AJ. "Robust Criticality in Hair Bundles." Eastern Auditory Retreat. May 20, 2016. Baltimore, MD. **Podium**.

Salvi JD, O'Maoileidigh D, and Hudspeth AJ. "Classification of the Behavior of Hair Cells Operating in a Noisy Environment." Association for Research in Otolaryngology 39th Annual MidWinter Meeting. February 20-24, 2016. San Diego, CA. **Podium**.

O'Maoileidigh D†, **Salvi JD†**, and Hudspeth AJ. "Hair Bundles Are Most Easily Entrained at the Onset of Self-Oscillation." Association for Research in Otolaryngology 39th Annual MidWinter Meeting. February 20-24, 2016. San Diego, CA. †**Presenting authors. Podium**.

Salvi JD, O'Maoileidigh D, Fabella BA, Tobin M, and Hudspeth AJ. "Control of a Sensory Hair Bundle's Function by its Mechanical Load." New York Symposium on Quantitative Biology of the Cell. January 15, 2016. Poster.

Salvi JD, O'Maoileidigh D, Fabella BA, Tobin M, and Hudspeth AJ. "Exposing the Varied Functional Roles of Hair Bundles with a Mechanical-Load Clamp." Association for Research in Otolaryngology 38th Annual MidWinter Meeting. February 21-25, 2015. Baltimore, MD. **Podium**.

Salvi JD, O'Maoileideigh D, Fabella BA, Tobin M, and Hudspeth AJ. "Mechanical Load Clamping Unveils the Multiple Sensory Modalities of Active Hair Bundles." Mechanics of Hearing. June 20-29, 2014. Cape Sounio, Greece. **Podium**.

Salvi JD, O'Maoileideigh D, Fabella BA, Tobin M, and Hudspeth AJ. "Characterization of active hair-bundle motility by a mechanical-load clamp." Eastern Auditory Retreat. June 16, 2014. New York, NY. **Podium**.

Fisher JAN, Steiner AB, **Salvi JD**, Dayan M, Nises J, SubbaRao M, and McPike P. "Neurodome: Visualizing neuroimaging data in immersive, full-dome planetarium environments." International Planetarium Society. June 23-27, 2014. Beijing, China. Poster.

Salvi JD, O'Maoileideigh D, Tobin M, and Hudspeth AJ. "Mechanical Tuning of Inner-Ear Hair Bundles." Howard Hughes Medical Institute Scientific Meeting. November 5-7, 2013. Chevy Chase, Maryland, USA. Poster.

Salvi JD, O'Maoileideigh D, and Hudspeth AJ. "An Investigation of Hair-Bundle Criticality." Active Soft and Biological Matter. Ecole de Physique des Houches. September 30 - October 5, 2012. Les Houches, France. Poster.

Lim JY, **Salvi JD**, and Donahue HJ. Controlling stem cell mechanosensitivity by nanotopographic culture. 2010 Society for Biomaterials (SFB), #397, April 21-24, 2010, Seattle, WA, USA. Poster.

Lim JY, **Salvi JD**, Zhang Y, Niyibizi C, and Donahue HJ. Substrate nanotopographic regulation of stem cell differentiation. 2010 Society for Biomaterials (SFB), #398, April 21-24, 2010, Seattle, WA, USA. Poster.

Salvi JD, Lim JY, Zhang Y, Yanoso J, Niyibizi C, and Donahue HJ. Culture on specific nanoscale topographies selects for subpopulations of stem cells with increased osteogenic potential. 55th Orthopaedic Research Society (ORS), February 22-25, 2009, Las Vegas, Nevada, USA. Poster.

Salvi JD, Lim JY, and Donahue HJ. Culture on specific nanoscale topographies selects for subpopulations of stem cells with increased osteogenic potential. 2008 Biomedical Engineering Society (BMES). October 2-4, 2008, St. Louis, MO, USA. **Podium**.

Lim JY, **Salvi JD**, Riddle RC, and Donahue HJ. Nanoscale substrate topography regulates stem cell mechanosensitivity. 54th Orthopaedic Research Society (ORS), #22, March 2-5, 2008, San Francisco, CA, USA. Poster.

Salvi JD, Lim JY, and Donahue HJ. Substrate nanotopography affects stem cell responsiveness to fluid flow. 2007 Biomedical Engineering Society (BMES), September 26-29, 2007, Los Angeles, CA, USA. **Podium**.

Salvi JD, Judson T, McLaren S, and Riddle M. "Implementing Quality Assurance Measures in a Student-Run Clinic: Unique challenges coupled with unique opportunities." AAMC Integrating Quality Meeting: Collaborating for Care. June 7-8, 2012. Chicago, IL. Poster.

Kutsenko A and **Salvi JD**. Weill Cornell Community Clinic's Facilitated Enrollment Program. 2012 Society of Teachers of Family Medicine (STFM). #30. February 4-5, 2012. Long Beach, CA. USA. Poster.

Salvi JD, Riddle M. The Weill Cornell Community Clinic Student Advisory Committee: A Model for Maintenance and Growth. 2012 Society of Teachers of Family Medicine (STFM). #18. February 4-5, 2012. Long Beach, CA. USA. Poster.

Umarjee S, Zheng S, Gilbert K, and **Salvi JD**. Nutrition Counseling Initiative at the Weill Cornell Community Clinic. 2012 Society of Teachers of Family Medicine (STFM). #20. February 4-5, 2012. Long Beach, CA. USA. Poster.

Narrative Report

I am a resident in the Research Concentration Program as part of the MGH/McLean Adult Psychiatry Residency Program, arriving here after completing my tenure at the Weill Cornell / Rockefeller / Sloan-Kettering Tri-Institutional MD-PhD Program in New York City.

My background is in neuroscience, biophysics, and dynamical systems. During my graduate training in the laboratory of Jim Hudspeth at The Rockefeller University, I employed a combination of micromechanical, electrophysiological, and computational techniques to find that sensory hair bundles are controlled not simply by their genetics, but by their mechanical microenvironment. I developed a system called a mechanical-load clamp, analogous to a dynamic clamp in electrophysiology, that permits an experimenter to control the various mechanical loads imparted onto hair bundles. Using this system, we found that these mechanical changes control how a hair bundle responds to perturbations and discovered an evolutionary role imparted by the cell's mechanical niche. I went on to complete a Postdoctoral Fellowship at The Rockefeller University, followed by a Grass Fellowship

in Neuroscience at the Marine Biological Laboratory in Woods Hole, MA. Here I continued my efforts in the field of sensory neuroscience.

Outside of the laboratory, I served as Executive Director of the Weill Cornell Community Clinicfor three years, during which we raised over $700,000 to maintain the clinic's efforts in years to come. I also co-founded a project called Neurodome, in which we develop planetarium shows and other immersive experiences to educate the public about the brain. Finally, my passion for teaching led me to found and teach a graduate-level course in biostatistics for two years at The Rockefeller University.

As a resident and beyond, I wish to apply my background in dynamical systems and basic neuroscience to the field of computational psychiatry. More specifically, I am interested in the intersection between genetics and behavioral dynamics in both humans and animal models. Clinicians understand that psychiatric illness is anything but static; however, our search for biomarkers has been limited by the fact that we have not adequately captured temporal dynamics in human and animal behavior. I wish to employ a combination of computational, genetic, and biophysical approaches to the study of human psychiatric pathophysiology.

My long-term goals can be summarized in the following specific aims:

- **Reassess nosology of psychiatric illness** through the use of genetics and computational modeling of human behavior with fine temporal resolution.
- Determine how **manipulations of genes** putatively implicated in psychiatric disease affects both brain functioning and behavioral dynamics in animal models.