04/27/2024

CURRICULUM VITAE
Shobha Vasudevan, PhD

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EDUCATION

Undergraduate	1985 B.Sc. Microbiology St. Josephs College, Bangalore University, India
	1995 Honors Chemistry St. Josephs College, Bangalore University, India
Other Advanced Degrees	2003 Ph.D. Molecular Genetics & Microbiology UMDNH/RWJMS, Rutgers University, NJ Laboratory of Dr. S. W. Peltz

POSTGRADUATE TRAINING

Fellowship	2003-2009 Postdoctoral Fellow Molecular Biochemistry & Biophysics Yale University, CT Laboratory of Dr. Joan A. Steitz

POSTGRADUATE HONORS AND AWARDS

2024-RNA Society Award for Excellence in Inclusive Leadership
2013-The Leukemia and Lymphoma Society New Idea Award
2010-Ryder Strategic Innovator Award for Medical Research/ECOR
2010-The Smith Family Awards Program for Excellence in Biomedical Research
2009-RNA Society Scaringe Award
2009-Leukemia Research Foundation Award
2009-Cancer Research Institute Investigator Award
2009-The V Foundation for Cancer Research Scholar Award
2008-The Leukemia and Lymphoma Society Special Fellowship
2008-New York Academy of Sciences Blavatnik Award Finalist
2004-Cancer Research Institute postdoctoral Fellowship

ACADEMIC APPOINTMENTS

July, 2009-Jan, 2019 Assistant Geneticist, Cancer Center, Massachusetts General Hospital, Boston, MA
July, 2009-Jan, 2019 Assistant Professor, Dept. of Medicine, Harvard Medical School, Boston, MA
Feb, 2019-current Associate Professor, Dept. of Medicine, Harvard Medical School, Boston, MA
Feb, 2019-current Associate Investigator, Cancer Center, Massachusetts General Hospital, Boston, MA

July, 2009-current Faculty, Center for Regenerative Medicine, Massachusetts General Hospital, Boston

Jan, 2013-current Principal Faculty, Harvard Stem Cell Institute, Harvard University, Boston, MA
Sept, 2019-current Faculty, HMS Initiative for RNA Medicine Harvard Medical School, Boston, MA
June, 2020-current Faculty member, Dana Farber/Harvard Cancer Center, Boston MA
May, 2023-current Affiliate Faculty, Broad Institute, Cambridge, MA
March, 2024-current Director of Technology and Innovation, Associate Professor (research), Brown RNA Center, Brown University, Providence, RI

OTHER APPOINTMENTS
2009 Review Committee Member, Kay Kendall Leukemia Foundation
2013- present: Review Committee Member, US-Israel Bi-national Science Foundation
2014- present: Review Committee Member, American Heart Association
2015- present: Ad hoc Reviewer, Massachusetts Life Sciences Center
2015 Ad hoc reviewer for Wellcome Trust/India Alliance-DBT Fellowship
2017 Pre-Award Reviewer V Foundation Grants, MGH Cancer Center
2018-present: Tosteson Fund for Medical Discovery Fellowship reviewer
2018 The European Research Council Consolidator Grant panel on Immunity and Infection
2019 Smith Family foundation Odyssey award committee reviewer, MGH ECOR
2019 The European Research Council Grant Agency
2021 DEI awards Review Committee, RNA Society
2021 Grant Review Committee, Harvard Initiative for RNA Medicine, HMS
2020-2021 NIAID study section, NIH
2021 NIA Board of Scientific Council (BSC), NIH
2023 SBIR/STTR Cancer Biotherapeutics Dev, NIH
2023 GCTI grant review, MGB
2020-2022: Co-Chair, CE, Joint Committee for the Status of Women, Faculty leader-at large, Harvard Medical School
2023-current: Scientific Advisory Committee member, Lethbridge Cancer Research Institute, Canada
2023-2027: Elected Gordon Conference co-chair for Translation control in health and disease

UNIVERSITY, HOSPITAL AND OTHER COMMITTEES
Local
2010-current Radiation safety permit officer for CCR labs.
2011-current RNA club. Discuss new areas, issues, questions, and exchange ideas and tools and obtain feedback on RNA related projects, career development grants and training.
2011-current Life sciences undergraduate research fair. Participate yearly in undergraduate student research fair to inspire and involve more students in research.
2010-current BBS student recruitment. Contribute yearly to the BBS graduate student recruitment
2015-2016 Kraft Symposium and Award Presentation Committee, Member
2014-2019 Center for Regenerative Medicine faculty recruitment committee, Member
2017 Cancer Center Seminar Series, Member
2017 CCR Faculty Recruitment Committee, Member
2020-2021 MGH Cancer Center D&I committee, Member
2023-current Dana Farber Pathfinders postdoc career development program, Mentor

National and International
2020-2023 Chair, the RNA Society DEI Committee
2017-current Scientific advisory board, Kernal Biologics, Member
2020-current DASL, Diversity and Science Lecture Series, Faculty leader
2021 AACR abstract review committee, Member

2019-current RNA Society Trainee Mentoring program
2021-current CURE DF/HCC NCI lab research mentoring program
2020-2023: Chair, RNA Society DEI Committee

Editorial Activities

2006-present	Ad hoc Reviewer	PNAS
2006-present	Ad hoc Reviewer	NSMB
2008-present	Ad hoc Reviewer	Nature Methods
2009-present	Ad hoc Reviewer	Molecular Cell
2009-present	Ad hoc Reviewer	Plos Genetics
2009-present	Ad hoc Reviewer	Plos Biology
2009-present	Ad hoc Reviewer	Nucleic Acids Research
2009-present	Ad hoc Reviewer	RNA
2009-present	Ad hoc Reviewer	Molecular & Cellular Biology
2016-present	Ad hoc Reviewer	eLife
2018-present	Ad hoc Reviewer	Genome Biology
2021-present	Associate Editor	Frontiers in Cell and Developmental Biology, Cancer

Industry Interactions
Consulting for Google Ventures, RNA therapeutics, 2023
SAB member, Kernal Biologics, mRNA therapeutics, 2017-current
Sponsored research agreement, mRNA Vaccines, Sanofi Pasteur Inc. 2024-current

MEMBERSHIP IN SOCIETIES
2014- current: International Society for Stem Cell Research; American Heart Association study section
2013-current: Oligonucleotide Therapeutics Society
2012-current: American Society for Biochemistry and Molecular Biology
2011-current: American Association for Cancer Research
2008-current: American Society for Cell Biology
2004-current: The RNA Society

PUBLICATIONS LIST

ORIGINAL PUBLICATIONS IN PEER-REVIEWED JOURNALS

1. Gonzalez, C.I., Ruiz-Echevarria, M.J., **Vasudevan, S,** Henry, M.F., and Peltz, S.W. (**2000**). The yeast Hrp1/Nab4 marks a transcript for nonsense-mediated mRNA decay. ***Molecular Cell.*** 5: 489-499.

2. **Vasudevan, S,** and Peltz, S,W. (**2001**). Regulated ARE-mediated mRNA decay in *Saccharomyces cerevisiae*. ***Molecular Cell*****.** 7: 1191-1200.

3. Duttagupta R, **Vasudevan S**, Wilusz CJ, Peltz SW. A yeast homologue of Hsp70, Ssa1p, regulates turnover of the MFA2 transcript through its AU-rich 3' untranslated region. ***Mol Cell Biol.*** 2003 Apr; 23(8):2623-32. PMID: 12665566.

4. **Vasudevan S**, Garneau N, Tu Khounh D, Peltz SW. p38 mitogen-activated protein kinase/Hog1p regulates translation of the AU-rich-element-bearing MFA2 transcript. ***Mol Cell Biol.*** 2005 Nov; 25(22):9753-63. PMID: 16260593.

5. **Vasudevan S**, Steitz JA. AU-rich-element-mediated upregulation of translation by FXR1 and

Argonaute 2. ***Cell***. 2007 Mar 23; 128(6):1105-18. PMID: 17382880.

6. **Vasudevan S**, Tong Y, Steitz JA. Switching from repression to activation: microRNAs can up-regulate translation. ***Science***. 2007 Dec 21; 318(5858):1931-4. PMID: 18048652.

7. **Vasudevan S**, Tong Y, Steitz JA. Cell-cycle control of microRNA-mediated translation regulation. ***Cell Cycle***. 2008 Jun 01; 7(11):1545-9. PMID: 18469529.

8. Mortensen RD, Serra M, Steitz JA, **Vasudevan S**. Posttranscriptional activation of gene expression in Xenopus laevis oocytes by microRNA-protein complexes (microRNPs). ***Proc Natl Acad Sci*** U S A. 2011 May 17; 108(20):8281-6. PMID: 21536868.

9. Chen AJ, Paik JH, Zhang H, Shukla SA, Mortensen R, Hu J, Ying H, Hu B, Hurt J, Farny N, Dong C, Xiao Y, Wang YA, Silver PA, Chin L, **Vasudevan S**, Depinho RA. STAR RNA-binding protein Quaking suppresses cancer via stabilization of specific miRNA. ***Genes Dev.*** 2012 Jul 01; 26(13):1459-72. PMID: 22751500.

10. **Vasudevan S.** Functional validation of microRNA-target RNA interactions. ***Methods.*** 2012 Oct; 58(2):126-34. PMID: 22910526.

11. Truesdell SS, Mortensen RD, Seo M, Schroeder JC, Lee JH, LeTonqueze O, **Vasudevan S**. MicroRNA- mediated mRNA translation activation in quiescent cells and oocytes involves recruitment of a nuclear microRNP. ***Sci Rep.*** 2012; 2:842. PMID: 23150790.

12. Liu M, Roth A, Yu M, Morris R, Bersani F, Rivera MN, Lu J, Shioda T, **Vasudevan S**, Ramaswamy S, Maheswaran S, Diederichs S, Haber DA. The IGF2 intronic miR-483 selectively enhances transcription from IGF2 fetal promoters and enhances tumorigenesis. ***Genes Dev.*** 2013 Dec 01; 27(23):2543-8. PMID: 24298054.

13. Lee S, Truesdell SS, Bukhari SI, Lee JH, LeTonqueze O, **Vasudevan S**. Upregulation of eIF5B controls cell- cycle arrest and specific developmental stages. ***Proc Natl Acad Sci*** U S A. 2014 Oct 14; 111(41):E4315-22. PMID: 25261552.

14. Solé X, Alves CP, Dey-Guha I, Ritsma L, Boukhali M, Lee JH, Chowdhury J, Ross KN, Haas W, **Vasudevan S**, Ramaswamy S. AKT Inhibition Promotes Nonautonomous Cancer Cell Survival. ***Mol Cancer Ther.*** 2016 Jan; 15(1):142-53. PMID: 26637368.

15. Bukhari SIA, Truesdell SS, Lee S, Kollu S, Classon A, Boukhali M, Jain E, Mortensen RD, Yanagiya A, Sadreyev RI, Haas W, **Vasudevan S**. A Specialized Mechanism of Translation Mediated by FXR1a-Associated MicroRNP in Cellular Quiescence. ***Mol Cell.*** 2016 Mar 03; 61(5):760-773. PMID: 26942679.

16. Le Tonqueze O, Kollu S, Lee S, Al-Salah M, Truesdell SS, **Vasudevan S**. Regulation of monocyte induced cell migration by the RNA binding protein, FXR1. ***Cell Cycle.*** 2016 07 17; 15(14):1874-82. PMID: 27229378.

17. Martinez I, Hayes KE, Barr JA, Harold AD, Xie M, Bukhari SIA, **Vasudevan S**, Steitz JA, DiMaio D. An Exportin-1-dependent microRNA biogenesis pathway during human cell quiescence. ***Proc Natl Acad Sci*** U SA. 2017 06 20; 114(25):E4961-E4970. PMID: 28584122.

18. Bukhari SIA, Truesdell SS, **Vasudevan S**. Analysis of MicroRNA-Mediated Translation Activation of In Vitro Transcribed Reporters in Quiescent Cells. ***Methods Mol Biol.*** 2018; 1686:251-264. PMID: 29030826.

19. Chery J, Petri A, Wagschal A, Lim SY, Cunningham J, **Vasudevan S**, Kauppinen S, Näär AM. Development of Locked Nucleic Acid Antisense Oligonucleotides Targeting Ebola Viral Proteins and Host Factor Niemann- Pick C1. ***Nucleic Acid Ther.*** 2018 10; 28(5):273-284. PMID: 30133337.

20. Ebright RY, Lee S, Wittner BS, Niederhoffer KL, Nicholson BT, Bardia A, Truesdell S, Wiley DF, Wesley B, Li S, Mai A, Aceto N, Vincent-Jordan N, Szabolcs A, Chirn B, Kreuzer J, Comaills V, Kalinich M, Haas W, Ting DT, Toner M, **Vasudevan S**, Haber DA, Maheswaran S, Micalizzi DS. Deregulation of ribosomal protein expression and translation promotes breast cancer metastasis. ***Science.*** **2020** 03 27; 367(6485):1468-1473. PMID: 32029688.

21. Lee S, Micalizzi D, Truesdell SS, Bukhari SIA, Boukhali M, Lombardi-Story J, Kato Y, Choo MK, Dey-Guha I, Ji F, Nicholson BT, Myers DT, Lee D, Mazzola MA, Raheja R, Langenbucher A, Haradhvala NJ, Lawrence MS, Gandhi R, Tiedje C, Diaz-Muñoz MD, Sweetser DA, Sadreyev R, Sykes D, Haas W, Haber DA, Maheswaran S, **Vasudevan S**. A post-transcriptional program of chemoresistance by AU-rich elements and TTP in quiescent leukemic cells. ***Genome Biol.*** **2020** 02 10; 21(1):33. PMID: 32039742.

22. Chen H, Yang H, Zhu X, Yadav T, Ouyang J, Truesdell SS, Tan J, Wang Y, Duan M, Wei L, Zou L, Levine AS, **Vasudevan S**, Lan L. m5C modification of mRNA serves a DNA damage code to promote homologous recombination. ***Nat Commun.*** **2020**; 11(1):2834. PMID: 32503981.

23. Li B, Clohisey SM, Chia BS, Wang B, Cui A, Eisenhaure T, Schweitzer LD, Hoover P, Parkinson NJ, Nachshon A, Smith N, Regan T, Farr D, Gutmann MU, Bukhari SI, Law A, Sangesland M, Gat-Viks I, Digard P, **Vasudevan S**, Lingwood D, Dockrell DH, Doench JG, Baillie JK, Hacohen N. Genome-wide CRISPR screen identifies host dependency factors for influenza A virus infection. ***Nat Commun.*** **2020** 01 09; 11(1):164. PMID: 31919360.

24. Guo H, Golczer G, Wittner BS, Langenbucher A, Zachariah M, Dubash TD, Hong X, Comaills V, Burr R, Ebright RY, Horwitz E, Vuille JA, Hajizadeh S, Wiley DF, Reeves BA, Zhang JM, Niederhoffer KL, Lu C, Wesley B, Ho U, Nieman LT, Toner M, Vasudevan S, Zou L, Mostoslavsky R, Maheswaran S, Lawrence MS, Haber DA. NR4A1 regulates expression of immediate early genes, suppressing replication stress in cancer. **Mol Cell. 2021** Oct 7;81(19):4041-4058.e15. doi: 10.1016/j.molcel.2021.09.016. PMID: 34624217.

25. Nomburg, J, Zou, W, Frost, TC, Datta C, **Vasudevan S**, Starrett GJ, J Imperiale, MJ, Meyerson M, DeCaprio JA. The Transcriptome Architecture of Polyomaviruses. **Plos Pathogens. 2022** 04; 18(4): e1010401. PMID: 35363834**.**

26. Datta, C, Truesdell, SS, Bukhari, SIA, Ngue, H, Buchanan, B, Wu, KQ, Le-Tonqueze, O, Lee, S, Kollu, S, Granovetter, M, Boukhali, M, Kreuzer, J, Haas, W, **Vasudevan S**. Ribosome changes elicit non-canonical translation for chemosurvival in G0 leukemic cells. **Science Advances 2022** 8 (43). DOI: 10.1126/sciadv.abo1304.

OTHER PEER-REVIEWED PUBLICATIONS

1. **Vasudevan S**, Peltz SW, Wilusz CJ. Non-stop decay--a new mRNA surveillance

pathway.***Bioessays***. 2002 Sep;24(9):785-8. doi: 10.1002/bies.10153.PMID: 12210514

2. **Vasudevan S**, Peltz SW. Nuclear mRNA surveillance.***Curr Opin Cell Biol.*** 2003 Jun;15(3):332-7. doi: 10.1016/s0955-0674(03)00051-6. PMID: 12787776

3. **Vasudevan S**, Seli E, Steitz JA. Metazoan oocyte and early embryo development program: a progression through translation regulatory cascades. ***Genes Dev.*** 2006 Jan 15; 20(2):138-46. PMID: 16418480.

4. Steitz JA, **Vasudevan S**. miRNPs: versatile regulators of gene expression in vertebrate cells. ***Biochem Soc Trans.*** 2009 Oct; 37(Pt 5):931-5. PMID: 19754429.

5. **Vasudevan S**. Posttranscriptional upregulation by microRNAs. ***Wiley Interdiscip Rev RNA***. 2012 May-Jun; 3(3):311-30. PMID: 22072587.

6. Letonqueze O, Lee J, **Vasudevan S**. MicroRNA-mediated posttranscriptional mechanisms of gene expression in proliferating and quiescent cancer cells. ***RNA Biol.*** 2012 Jun; 9(6):871-80. PMID: 22699554.

7. Bukhari SI, **Vasudevan S**. FXR1a-associated microRNP: A driver of specialized non-canonical translation in quiescent conditions. ***RNA Biol.*** 2017 02; 14(2):137-145. PMID: 27911187.

BOOKS AND BOOK CHAPTERS

1. Lee S, **Vasudevan S**. Post-transcriptional stimulation of gene expression by microRNAs. ***Adv Exp Med Biol.*** 2013; 768:97-126. PMID: 23224967.

PUBLICATIONS SUBMITTED OR IN PREPARATION

1. Lee, S, **Vasudevan S**. JNK MAPK Regulates IFN-Stimulated Genes and Cell Adhesion in Chemoresistant, Quiescent Leukemic Cells. In review submitted Feb 2024

2. Bukhari, SIAB, Truesdell, SS, Datta, C, Plotsker, E, Elased, R, Koh, SB, Kreuzer, J, Morris, R, Bhambani, V, Lee, J, Lin, Y, Ellisen, L, Haas, W, Ly, A, **Vasudevan, S**. Post-transcriptional regulation of RNA methylation by stress signaling promotes chemosurvival. In revision Cell Chemical Biology. bioRxiv 2023.05.19.540602; doi: https://doi.org/10.1101/2023.05.19.540602

3. Zhou, P, Li, Z, Liu, F, Kwon, F, Hsieh, T-C, Ye, S, **Vasudevan, S**, Lee, J-Ae, Zhou, C. BAMBI: Integrative biostatistical and artificial-intelligence models discover coding and non-coding RNA genes as biomarkers. bioRxiv 2024.01.12.575460; doi: https://doi.org/10.1101/2024.01.12.575460

4. Ngue, H, Kim, H, Truesdell, SS, **Vasudevan, S.** Rol of coding and non-coding RNAs transmitted via extracellular vesicles by quiescent, therapy-resistant tumor cells. In preparation for submission in 2024.

Provisional patents applied

1. **S Vasudevan**, S Lee, "Combination therapy against chemoresistance in leukemia" US 62/477,757.
2. **S. Vasudevan**, C. Datta, S. Truesdell. Treating chemoresistant cancers with FXR1 amplification. 63/276,886
3. **S. Vasudevan**, SIA. Bukhari, S. Truesdell. Compositions and methods for treating therapy resistant cancer. PCT US2021/048753

ABSTRACTS

Research Statement

My research program is focused on investigating post-transcriptional mechanisms of regulation of gene expression in clinically resistant cancers such as refractory leukemias. Such cancers harbor subpopulations that are in transient, cell-cycle arrested states, called quiescence (G0). G0 cells survive clinical therapy that targets proliferating cells and can subsequently re-enter the cell cycle. Such cells show specific gene expression that enables therapy survival and retains their ability to re-enter proliferation and cause tumor persistence. Resistant G0 cells are poorly understood despite their clinical significance. Resistance factors and their gene expression that enables clinical drug survival of resistant G0 cells in tumors, need to be uncovered.

The key finding of my prior studies (Cell 2007, Science 2007, PNAS 2011, Genes & Dev, 2012), which forms the basis of my research program, is that mRNA regulatory elements, noncoding microRNAs, and associated RNA- protein complexes (RNPs) are directed by signaling induced in such G0 resistant cells, to alter expression of clinically important genes that underlie the functions and survival of such cells. We identified post-transcriptional effectors associated with key, expressed mRNAs under such distinct conditions by developing novel in vivo crosslinking-coupled, RNA affinity purification methods to purify endogenous RNPs, associated with mRNAs, microRNAs, and ribosomes. We adapted several methods, including modified antisense, to block RNA mechanisms and uncover their functions (Genes & Dev 2013, Nuc Acid Therap 2018).

Our studies revealed that the gene expression program in G0 acute monocytic leukemic (AML) cells, is distinct from untreated and normal cells, and leads to chemosurvival. While transcriptional changes have been studied extensively in AML, we find that 50% of gene expression changes in G0 AML are at the translation level, without RNA-level changes; these impact AML survival but are missed by RNA profiling methods that do not measure RNA usage on polysomes. We uncovered that conventional translation is inhibited, yet specific genes needed for survival are translated. This is induced in response to stress signaling triggered by clinical therapy that inhibits the mTOR pathway and activates the integrated stress response. (PNAS 2014, Mol. Cell 2016). This permits non- canonical mechanisms that express pro-survival cytokines and anti-apoptotic genes in G0 cells, in vivo and in patient samples. We find these pro-survival genes need to be translated for G0 survival and AML persistence (Genome Biol. 2020). Their translation mechanism would need ribosome changes and marks on specific RNAs to selectively express them without canonical translation factors in G0 AML cells. Our studies thus reveal unexplored adaptations to stress signals at the RNA usage level, which cause cancer persistence.

Our data revealed that ribosomal changes direct specific translation in persistent cancer cells (Science 2020). We find specific snoRNAs, noncoding RNAs that recruit enzymes and chemically modify ribosomal RNAs (rRNAs), as well as ribosomal proteins increase in G0 cells and are required for AML survival. Such ribosome modifications enable non-canonical translation with atypical coding start sites and novel open reading frames. This leads to expansion of the expressed genome at the translation frame level, without RNA level changes. These changes are missed by all types of profiling that map RNA

levels and canonical coding frames only, and do not detect atypical start sites or coding frames that are significantly altered by therapy stress and cell states. Together, our data discovered that G0 ribosomes function not only as translation machineries, but also as signaling molecules to recruit and activate stress kinases that promote survival gene translation with new coding frames that cause AML drug survival and immune evasion (Science Advances 2022).

On the messenger side, we find that RNAs are chemically modified by stress signals, triggered by DNA damage inducing drugs in persistent cancer cells (Nat Commun. 2020; In revision Biorxiv 2024). Our translation profiles further reveal circular RNAs (circRNAs) that are induced by stress in G0 AML, and are important for tumor drug and immune survival. CircRNAs are produced by back-splicing as closed loops and are as abundant as linear mRNAs with critical roles, via associations with DNA, RNAs, and proteins, in AML and other cancers. CircRNAs are also exuded in extracellular vesicles (EVs) that alter recipient tumor cells for tumor progression (MCT 2016). CircRNAs have recently been found to be translated and are being used to encode vaccines. CircRNAs and their unpredicted peptides are understudied as they are missed by standard profiling methods that only detect linear RNA ends and canonical coding start sites; so, we developed new methods to map circRNAs on polysomes in limiting, heterogeneous patient samples (similar to single cell profiling with 500 cells, mapping RNA levels as well as RNA usage on polysomes to translate to proteins). We find that circRNAs are recruited to polysomes, via distinct sequences and ribosome recruiters that are needed for translation and consequently for drug and immune survival of G0 AML. Importantly, these data revealed distinct sequences and mechanisms that induce selective RNA translation, which are being used for RNA vaccine applications.

The primary goal of my lab's research program is to investigate the specialized gene expression that promotes the persistence of clinically resistant, quiescent cells in cancers, such as in AML. The mechanisms of regulation of critical genes in resistant cancer cells, by coding and noncoding RNAs and their specialized RNPs, translation mechanisms, ribosome changes, and associated modification enzymes and effectors, will be characterized, using human cancer cell lines, patient tumor samples, and in vivo tumor models. These studies will provide insights into the roles of RNA mechanisms in clinically refractory G0 cancer cells and will lead to new therapeutic approaches against cancer persistence. My research program has 14 years of experience studying G0, RNA, and translation mechanisms in persistent cancers (e.g.: Genome Biol. 2020, MCT 2016, Mol. Cell 2016, Science 2020, Nat. Commun 2020, Science Advances 2022), and collaborate extensively on studies on RNA mechanisms in disease and with industry on RNA vaccine development.

INVITED PRESENTATIONS

Local Invited Presentations:

2008	Switching from Repression to Activation: MicroRNAs mediate translation upregulation. Yale Stem Cell Retreat, New Haven.
2008	Switching from Repression to Activation: MicroRNAs mediate translation upregulation Molecular Virology Interest Group, Yale University, New Haven.
2010	Regulated microRNP Functions. HMS Cell Biology and BCMP Seminar Series, Harvard Medical School, Boston.
2013	10th anniversary Center for Regenerative Medicine, session chair MGH, Boston.

2013 Regulation of Quiescence by MicroRNAs / 25th Anniversary Center for Cancer Research Symposium, MGH, HMS, Boston.

2016 Specialized translation mechanisms in quiescent cancer cells. The Kraft award symposium, Center for Cancer Research, MGH, HMS, Boston.

2016 Specialized microRNP and translation mechanisms in quiescent cancer cells. The Cutaneous Biology Research Center, MGH. HMS, Charlestown, MA.

2016 Specialized microRNP and translation mechanisms in quiescent cancer cells. Harvard Stem Cell Institute, Cambridge, MA.

2017 Specialized translation mechanisms in quiescent cancer cells. Harvard Stem Cell Institute, Cambridge, MA.

2018 A specialized post-transcriptional mechanism of gene expression in chemoresistant cancer cells. Harvard Stem Cell Institute, Cambridge, MA.

2019 Post-transcriptional mechanism of gene expression in chemoresistant leukemia. Heme Malignancy meeting, MGH, Boston, MA.

2019 Post-transcriptional mechanism of gene expression in chemoresistant cancer cells. Harvard Stem Cell Institute, Cambridge, MA.

2022 Targeting non-canonical post-transcriptional mechanisms of gene expression in chemoresistant cancer cells. Moderna, Online, Cambridge, MA.

2022 Targeting coding and noncoding RNAs to control immune evasion by chemoresistant cancer cells. Alnylam, Online, Cambridge, MA.

2022 Targeting non-canonical post-transcriptional mechanisms of gene expression in chemoresistant cancer cells. Sanofi Pasteur Inc, Waltham, MA.

2023 Targeting non-canonical post-transcriptional mechanisms of gene expression in chemoresistant cancer cells. Steele lab Seminar series, Online, Charlestown, MA.

Report of Regional, National and International Invited Teaching and Presentations

Regional

2003 Poly(A) binding protein plays a specific role in the post-transcriptional regulation of ARE- containing transcripts.
Post-transcriptional Regulation of the Immune and Inflammatory Response, New Hampshire 2010.
Gene Expression by microRNPs in quiescent cells, Gordon Research Conference on Newport, RI, Invited Speaker.

2011-2014 R — Regulation of Quiescence by MicroRNAs. The Smith Family Foundation Scientific Session, Boston.

2012 — Post-Transcriptional Gene Expression in Quiescence.
Boston University Medical Campus, Boston, Pulmonary Center Seminar Series Post-Transcriptional Gene Expression in Quiescence,
Gordon Conference, Post-transcriptional Regulation of Gene Expression, Newport, RI, Session Chair and Invited Speaker.

2014 — A specialized mechanism of microRNA-mediated translation in quiescence.
RNAi, MicroRNAs & Stem Cells Therapeutics Discovery Symposium, Waltham, Invited Speaker & Session Chair.

2015 — Gordon Research Conference on Cell Growth & Proliferation,
A specialized translational program in quiescence. Mt Snow, VT.

2015 — A specialized mechanism of microRNA-mediated translation in cellular quiescence.
AACR noncoding RNA meeting, Boston.

2015 — A specialized mechanism of microRNA-mediated translation in quiescence.
MiRNA & lncRNA World, Boston.

2015, 2016 — A Specialized Mechanism of microRNA-mediated Translation in Cellular Quiescence. The Smith Family Foundation Scientific Session, Boston.

2016 — A Specialized Mechanism of microRNA-mediated Translation in Cellular Quiescence. The RNA Institute, Boston.

2016 — A specialized translational program in quiescence.
Gordon Research Conference on Post-transcriptional regulation, Stowe, VT.

2017 — A Translation program of chemoresistance regulators in quiescent cancer cells.
The Smith Family Foundation Scientific Session, Boston.

2017-19 — A Translation program of chemoresistance regulators in quiescent cancer cells. HSCI Annual Chalk talk, Boston.

2021-2023 — Post-transcriptional mechanisms of chemosurvival in quiescent, cancer cells. Clinical Science and Cancer Forum talks online, MGH, Harvard Medical School, Boston, MA.

2023 — Chair, RNA therapeutics session, 8th Annual RNA Medicine Symposium, Harvard Medical School Initiative for RNA Medicine.

2023 — Post-transcriptional mechanisms of chemosurvival in quiescent, cancer cells. Deep Genomics AI workbench therapeutic solutions. (Virtual), Toronto, CA.

2024 — Preclinical functional optimization of mRNA therapeutics. Massachusetts Life Sciences Center (Virtual). Waltham, MA.

National

2000 MicroRNAs mediate Translation Upregulation in Quiescent Cells, Fourteenth Annual Meeting of The RNA Society, Madison, Switching from Repression to Activation: Selected Talk.

CSH Banbury Conference on Fragile-X: From molecules to disease. Banbury, Cold Spring Harbor, NY, Invited Talk

2000 Regulation of ARE-mediated mRNA turnover in Saccharomyces cerevisiae, Cold Spring Harbor Translation Control Meeting, NY, Selected Talk.

2001 Unraveling the mechanism of ARE-mediated decay Fourth West Coast Meeting on mRNA stability and Translation at Seattle, Selected Talk.

2002 AU-rich elements control translation and mRNA stability in Saccharomyces cerevisiae Cold Spring Harbor Translation Control Meeting, Selected Talk.

2007 AU-rich element-mediated translation upregulation by FXR1 and AGO2.New York Academy of Sciences, New York,

2007 AU-rich element-mediated translation upregulation by FXR1 and AGO2, Twelfth Annual Meeting of The RNA Society, Madison, Selected Talk.

The Biology of Post-transcriptional Gene Regulation, Spring Harbor, NY, Regulation of microRNPs, Invited Speaker

Switching from Repression to Activation: MicroRNAs mediate translation upregulation, ASCB Annual Meeting, San Francisco, Selected Talk.

The Biology of Post-transcriptional Gene Regulation, Spring Harbor, NY, Regulation of microRNPs, Invited Speaker

2011 Regulated Post-Transcriptional Gene Expression in Quiescence & Germ Cells, Uniformed Services University of the Health Sciences, Bethesda, Invited Speaker.

2012 Gene Expression Mechanisms in Quiescence & Germ Cells,102nd AACR Meeting, Orlando, Invited Speaker.

2012 Post-Transcriptional Gene Expression in Quiescence, University of Colorado, Fort Collins, Invited Speaker.

2013 Characterization of microRNAs and targets in quiescent breast cancer cells, CDMRP Breast Cancer Research Program, D.C., Invited Speaker.

2014 A specialized mechanism of translation regulation in quiescence, National Institute of Aging, Baltimore, Invited Speaker.

2014 A specialized mechanism of microRNA-mediated translation in quiescence Cold Spring Harbor Translational Control Meeting, CSHL, NY, Selected Talk.

2016 Specialized translation mechanisms in quiescence ASBMB meeting, San Diego

2017 Specialized microRNP and translation mechanisms in quiescent cancer cells Cold Spring Harbor Translational Control Meeting, CSHL, NY

2017 Specialized microRNP and translation mechanisms in quiescent cancer cells GRC conference Translation Machinery in health & disease. Galveston, TX

2017 A translation program of chemoresistance regulators in quiescent cancer cells, University of Rochester Medical School

2017 Specialized microRNP and translation mechanisms in quiescent cancer cells AACR Conference DC.

2017 A translation program of chemoresistance regulators in quiescent cancer cells, AACR heme malignancies, Boston

2017 Specialized microRNP and translation mechanisms in quiescent cancer cells, Cold Spring Harbor RNA Processing Meeting, CSHL, NY

2018 A translation program of chemoresistance regulators in quiescent cancer cells, Invited speaker University of West Virginia, Morgantown, WV

2018 A translation program of chemoresistance regulators in quiescent cancer cells, ASBMB San Diego, Speaker & Session Chair

2018 A specialized post-transcriptional mechanism of gene expression in chemoresistant cancer cells. University of Penn Center for Regeneration, Hershey, PA

2019 Post-transcriptional mechanism of gene expression in chemoresistant cancer cells. Harvard Institute for RNA Medicine, Harvard Medical School, Boston, MA.

2021 Post-transcriptional mechanisms of chemosurvival in quiescent, cancer cells. DF/HCC Connect Science Series online, Harvard Medical School, Boston, MA.

2022 Post-transcriptional mechanisms of chemosurvival in quiescent, cancer cells. UCSF Cancer Center Seminar Series online, UCSF, CA.

2022 Post-transcriptional mechanisms of tumor survival in quiescent cancer cells. University of Texas, Austin, Seminar Series, Austin, TX.

2022 Post-transcriptional mechanisms of tumor survival in quiescent cancer cells. NIEHS, Durham, NC.

2022 Post-transcriptional mechanisms of tumor survival in quiescent cancer cells. Fralin Biomedical Research Institute Cancer Center, Children's National Hospital and Virginia Tech, DC.

2023 Post-transcriptional mechanisms of tumor survival in quiescent cancer cells. NCI, Online,

DC.

2023 Post-transcriptional mechanisms of tumor survival in quiescent cancer cells. Northwestern University, Chicago.

2024 Targeting post-transcriptional mechanisms of tumor persistence. Case Western Reserve University, Cleveland.

2024 Targeting post-transcriptional mechanisms of tumor persistence. NCI, NIH.

2024 Targeting post-transcriptional mechanisms of tumor persistence. Stanford RNA Medicine Seminar Series, Virtual.

International

2010 Regulated Gene Expression by microRNPs in quiescent cells,5th Microsymposium on small RNAs, IMBA, Vienna, Austria

2010 Regulated Gene Expression by microRNPs in quiescent cells, 4th RNA Stability Meeting, RNA Turnover and Translation: Biological and Pathological Ramifications, Montreal

2013 A specialized mechanism of translation regulation in quiescence Eighteenth Annual Meeting of The RNA Society, Davos.

2014 A specialized mechanism of microRNA-mediated translation in quiescence, Nineteenth Annual Meeting of The RNA Society, Quebec City.

2015 A specialized mechanism of microRNA-mediated translation in cellular quiescence Translational Control Meeting, EMBL, Heidelberg, Invited Speaker & Session Chair

2016 Specialized microRNP and translation mechanisms in quiescent cancer cells, Oligonucleotide Therapeutics Society Annual Meeting, Montreal, Speaker

2018 A specialized post-transcriptional mechanism of gene expression in chemoresistant cancer cells. Center for Genomic Regulation (CRG), Barcelona, Spain

2019 A specialized post-transcriptional mechanism of gene expression in chemoresistant cancer cells. University of Montreal, Montreal, Quebec, CA

2019 A specialized post-transcriptional mechanism of gene expression in chemoresistant cancer cells. Annual RNA Society Meeting, Krakow, Poland

2020 A specialized post-transcriptional mechanism of gene expression in chemoresistant cancer cells. RNA Collaborative Seminar Series for worldwide RNA Centers (online).

2020	Post-transcriptional mechanisms of chemosurvival in quiescent, cancer cells. VIT, Vellore, online.
2021	Post-transcriptional mechanisms in cancer quiescence and therapy survival, AACR Annual Meeting, AACR-Bayer Innovation and Discovery award. Online.
2021	Chair DEI RNA Society discussion panel, Annual Meeting of The RNA Society, online.
2021	A specialized mechanism of microRNA-mediated translation in quiescence, Annual Meeting of The RNA Society, Online.
2022	Targeting non-canonical post-transcriptional mechanisms of gene expression in chemoresistant cancer cells. Keystone small RNAs: from bench to bedside, Santa Fe, NM.
2022	Ribosomal changes by FXR1 promotes leukemia survival, Annual Meeting of The RNA Society, Boulder, CO.
2022	Chair DEI RNA Society discussion panel, Annual Meeting of The RNA Society, Boulder, CO and online.
2022	Ribosomal changes by FXR1 promotes leukemia survival, Invited speaker, RiboClub, Sherbrooke.
2022	Invited Speaker on Diversity, Equity, Inclusion, and Accessibility in the RNA Society, why, how, & the united path forward. RiboClub, Sherbrooke.
2022	A specialized mechanism of translation for leukemia survival, Invited speaker, IRB Barcelona BioMed Conference on Translation in cancer and microenvironment interactions, Barcelona.
2023	Chair DEI RNA Society discussion panel, Annual Meeting of The RNA Society, Singapore.
2023	Invited speaker, session chair, Post-transcriptional mechanisms of tumor survival in quiescent cancer cells. Gordon Research Conference on Translation control of health and disease. Galveston, Tx.

GRANTS

Ongoing

1. Vasudevan (PI)	06/09/2020-03/31/2025
NIH/NIGMS MIRA 1R35 GM134944-01	$250,000 per year DC (+$169,671 Supplement, 2023)

Specialized post-transcriptional mechanisms of gene expression in quiescence

The objective of this proposal is to investigate post-transcriptional mechanisms and regulated gene expression in quiescence in vitro and in vivo to understand the role of quiescence in disease persistence.

Role: PI

2. Vasudevan (PI) 02/01/2024-01/31/2026
Sanofi Pasteur Inc SRA $555,066/year mRNA Therapeutics (MRTs)
The primary goal of this project is to characterize and enhance the efficiency of mRNA vaccines in human cells.
Role: PI

3. Vasudevan (PI) 06/01/2021-05/31/2024
Sundry and Kurt Isselbacher Fund $250,000 per year total
Targeting non-canonical RNA mechanism changes in resistant cancer
The objective of this proposal is to investigate the role of RNA mechanisms in clinically refractory cancers.
Role: PI

4. Vasudevan (co-Investigator; PI: Marc Wein) 10/01/2022-09/31/2024
Smith Family Foundation Excellence Award $15000 per year total (0.6CM)
Trafficking and translation of mRNA in osteocyte dendrites
The goal is to study osteocyte dendrite mRNA transport and translation in a mouse model of osteoporosis, to understand healthy dendrites and find ways to rejuvenate lost dendrites in patients with osteoporosis.
Role: co-I

<u>Pending</u>
1. Vasudevan (PI) 06/01/2024-05/30/2026
Mass Life Sciences Center (MLSC) Novel Drug Delivery $750,000 DC
Preclinical functional optimization of mRNA therapeutics
The primary goal of this project is to characterize and improvise MRTs for greater efficacy.
Role: PI

2. Vasudevan (PI) 09/01/2024-08/30/2029
NIH/NCI R01 $400,000 per year DC
Role of circRNAs in chemosurviving cancer cells
The primary goal of this project is to characterize the role of circRNAs in chemosurviving leukemia.
Role: PI

3. Vasudevan (PI) 04/01/2025-03/30/2030
NIH/NCI R01 $450,000 per year DC
Role of translation mechanisms in refractory cancers
The primary goal of this project is to characterize the role of translation changes in chemoresistant cancers.
Role: PI

4. Vasudevan (PI) 09/01/2024-08/31/2026 NIH/NCI R21
Regulation of tumor survival by RNA modifications
The primary goal of this project is to characterize the role of RNA modifications in chemoresistant cancer.
Role: PI

Completed

1. Vasudevan (PI) 01/15/2020-12/31/2021
NIH/NCI 1R21CA220103-01A1
Role of RNA methylation in chemoresistant cancer cells
The primary goal of this project is to characterize the role of mRNA base modification in resistant cancer.
Role: PI

2. Vasudevan (PI) 07/01/2020-06/30/2021 AACR
AACR-Bayer Innovation and Discovery Award
Targeting post-transcriptional regulation underlying chemoresistance
The goal is to target the post-transcriptional expression induced by therapy, to curb refractory breast cancer. Role: PI

3. Vasudevan (PI) 02/13/2015-06/30/2020
NIH/NIGMS 1R01GM100202
Post-transcriptional gene expression of TNFα by an FXR1-associated microRNP
The primary goal is to characterize the FXR1a-microRNP in G0 leukemic cells that translates TNF mRNA. Role: PI

4. Vasudevan (PI) 06/01/2017-05/31/2019
NIH/NCI 5R01CA185086-04
(PQC6) Molecular Determinants of Quiescent Cancer Cells
The goal is to characterize the molecular pathways in early quiescent breast cancer cells.
Role: PI

5. Vasudevan (co-Investigator; PI: Othon Illiopolous) 10/01/2019-09/31/2021
DOD-CDMRP KC180261
Therapeutic Targeting of FLCN-Deficit Renal Cancers
The goal is to take a systems biology approach to profile all kinases regulated by FLCN to target rare RCCs.
Role: co-I

UNIVERSITY TEACHING, ADVISING and MENTORING ROLES

Teaching and Mentoring

As an active member of the HMS BBS graduate program, I contributed to teaching a core course for over 9 years and lecturing in others. I participated in over 15 PQE, DAC and defense committees and in the yearly graduate program recruitment. Apart from rotation students, I trained and continue to train many HSCI and Harvard undergraduates, for their senior thesis research. I lecture in the basic science seminar series for heme-oncology fellows at HMS and am a basic science faculty mentor for the MGH Cancer Center training grant that trains clinical fellows in basic research. I trained several postdoc fellows in my lab; some have become independent investigators, and others have progressed to senior research positions in industry and academia. I have also served as post-doctoral advisor-mentor for K career development grants for several post-docs who have progressed to faculty positions. I run an RNA club monthly to bring post-docs in the Boston-east coast area together, strengthening educational and research connections among HMS, MGH, other institutes and industry. I participated as a mentor for post-docs and other trainees at the RNA Society globally, who have progressed to faculty or senior positions in academia and industry. I authored over 33 articles, reviews, editorials, chapters and methodology articles on RNA and translation mechanisms in cancer quiescence, which are extensively cited.

Teaching of Students in Courses:

2009-2016	BCMP200 Discussion section/seminar, BBS graduate course	HMS
	HMS BBS Graduate students (PhD/MD-PhD)	Four 1.5 hour sessions/ year
2012	BBS230 Literature Discussion section/seminar,	HMS
	BBS graduate course, HMS BBS Graduate students (PhD/MD-PhD)	One 3 hour session
2014	BCMP200 Lecture, BBS graduate course	HMS
	HMS BBS Graduate students (PhD/MD-PhD)	One 1.5 hour lecture session

Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs):

2010-2013	Regulated Gene Expression in quiescent, resistant cancers. Basic Science Seminar Series	MGH
	Hematology-oncology HMS clinical fellows	1h seminar yearly
2011	Regulated Gene Expression by microRNPs in quiescent cells. Basic Science Seminar Series	MGH
	hematology/oncology fellows at MGH, HMS, Boston	1h seminar
2012	Regulated Gene Expression by microRNPs in quiescent cells / The basic Science Seminar Series	MGH
	first year hematology/oncology fellows at MGH, HMS, Boston,	1h seminar
2013	Regulated Gene Expression by RNAs and RNPs in Resistant Cancers.	MGH
	Basic Science Seminar Series with hematology/oncology fellows at MGH, HMS, Boston	1h seminar
2017	Cancer Biology for the MGH Clinical Researcher	MGH
2017	Hematology-oncology HMS clinical fellows & MGH postdocs	(seminar chair/ discussion)
2009-current	scientific writing, presentations, research project, lab training, and career advancement training of students, residents and postdocs	+50hrs/year

Laboratory and Other Research Supervisory and Training Responsibilities:

1999-2003	Research mentorship of a graduate student, a master's student, summer students, research assistant students. Lab research mentorship for 4 years, 2 years and one summer respectively
2010-2012	Research mentorship of Angela Chen, graduate student till PhD, research mentorship on noncoding RNA mechanisms for 1.5 years of a final year graduate student from a collaborating lab (R. De Pinho group, Chen et al., Genes & Dev, 2012). Currently director at Roche.

2012-current	Research mentorship of 3 rotation students, BBS, Harvard Medical School
2012-current	Research mentorship of 22 undergraduate science and bioengineering students, each of whom completed three year senior thesis honors program in my lab, graduated with publications and honors.
2012-current	Research mentorship of MS student, (graduated) from Boston University, research assistant students from Boston University, Northeastern University, and MCPH
2014	Research mentorship of 1 DAAD fellowship international program student from German Cancer Center post-bac research
2013-current	Research mentorship of several Program for Research in Science and Engineering (PRISE), and Harvard College Research Program (HCRP) undergraduate summer or term research interns (4-5 per year)
2017-2022	Research mentorship of HSCI interns from the summer HSCI internship program that selects 35 students globally annually.
2023	Research mentorship of intern fellow from Grinnell college internship program
2022-current	3 year Senior thesis mentorship of Suffolk college minority student intern

Formally Mentored Harvard Medical, Dental, Graduate, Undergraduate Students:

2012	Katie Richeson, PhD HMS rotation student / BBS Lab trainee, Supervised lab training, learned molecular techniques and cell culturing
2014	Aditi Shukla, HMS rotation student / BBS Lab trainee, Supervised lab training, learned RNA modification and fractionation methods
2014	Lisa Walker HMS rotation student / BBS Lab trainee, Supervised lab training, learned in vivo crosslinking coupled purification
2021	Alisha Marte, CURE DF/HCC NCI summer post-bac student
2023	Harrison Ngue, former undergrad at Harvard. MIT-HMS MD-PhD student. Supervised lab training. Informatic applications. Won the Hoopes prize for his senior research thesis in our lab. Won awards from Amgen and other sources for his study. Co-author on Science advances 2022, another manuscript in preparation.

Other Mentored Trainees and Faculty:

2010-2011	Maria Serra, Currently Research Scientist, University of Turin, Italy Post-doctoral Fellow in my lab-Accomplished first author publication, PNAS 2011.
2011-2014	Olivier Le Tonqueze, Currently Research Scientist, MiNK Therapeutics, MA Post-doctoral Fellow in my lab-Accomplished first author publication, Cell Cycle 2016, co- author publications in Sci Rep 2012 and RNA Biology 2012, performed small RNA and CLIP-seq.

2011-2013 Ju Huck Lee, Currently Investigator, Korea Research Institute of Bioscience and Biotechnology, Korea

Post-doctoral Fellow in my lab-Accomplished co-author publications in Sci Rep 2012, and Mol Cell Therap 2016, performed Gro-seq and small RNA seq.

2021-2022 Hyejin Kim, Post-doctoral research engineer, Univ of Georgia collaboration on EVs.

2021-2022 Pritha Choudhury, co-author on manuscript in revision, Post-doc in Cleveland Clinic

2012-2020 Sooncheol Lee, Former Post-doctoral Fellow in my lab.
Accomplished 3 first author publications, PNAS 2014 and Book Chapter 2012 as well as a first author Genome Biol 2020, co-author publication in Molecular Cell 2016, a collaboration in Science 2020, another manuscript in review (Biorxiv/689570), achieved a provisional patent (US 62/477,757), poster award winner MGH SAC 2018, awarded post-doctoral fellowships from MGH ECOR and Korea National Science Foundation, performed translation and ribosome profiling, chemoresistance and therapeutic studies in vitro and in vivo.
Senior Scientist at Laronde.

2012-2022 Syed Irfan Bukhari, Postdoc and then Instructor in my lab
Accomplished three first author publications, Molecular Cell 2016, Methods in Molecular Biology 2017 and RNA Biology 2017, co-author publications in PNAS 2014, PNAS 2017, and Genome Biol 2020, many collaborations with Li et al Nature Comms 2020, Martinez et al PNAS, 2017, others in revision or in review, awarded post-doctoral fellowship from MGH ECOR, excellence award, meeting travel award from RNA Society 2014 for platform presentation as well as travel award from GRC 2015, & CSHL translation control 2020, performed microRNA mechanism, RNA modification and long noncoding RNA studies in G0 chemoresistant cells in vitro and in primary samples. His final first co-author manuscript is in revision (biorxiv2023), lead to a patent application, and lead him to his position as senior scientist at PolyA RNA Therapeutics, Google Ventures.

2019-present Chandreyee Datta, 5th yr Post-doctoral Fellow-transitioning to scientist Broad Institute. Studying ribosome modifications in G0 cancer cells and the immunopeptidome in refractory cancer. Published a major first author paper in Science Advances 2022, which lead to an ECOR FMD fellowship, several invited CSHL, RNA Society, and Harvard talks, and a patent application. She is a coauthor in a collaboration with J deCaprio and M Meyerson in Plos Pathogens. She shares final first co-author manuscript with Irfan on their manuscript in revision (biorxiv2023). Co-author on 2 other manuscripts in process.

2022-2024 Jitendra Shrestha, Post-doctoral Fellow, studied circRNAs in refractory cancers.

2023-2024 Ruby Maharjan, Post-doctoral Fellow studied tumor associated immune cells.

2023-2024 Zeeba Kamaliyan, Post-doctoral Fellow studied RNA metabolism in refractory cancers.

2020-present	Delphine Tripp, MIT-Harvard graduate student, 4th year, HGWISE STEM URM Mentoring program Mentee
2019-present	Chan Zhou, Currently Asst Professor, U. Mass Worcester. External Faculty Advisor. Advised on projects and grant application with one site visit and multiple skype 1 hour sessions.
2019-2020	Ioanna Kalvari, Research Scientist, Rfam, European Bioinformatics Institute (EMBL-EBI), Cambridge, UK, RNA Society Mentee
2014	Janine Jung, Currently PhD Student at German Cancer Research Center, Heidelberg, Germany DAAD Mentee Post-graduate Research Assistant in my lab-Accomplished research training on measuring long noncoding RNA regulation in hypoxia and quiescence in cancer cells.
2016-present	I Martinez, Currently Assistant Professor, University of West Virginia, Morgantown External Faculty Advisor. Advised on projects and grant application with one site visit and multiple skype 1 hour sessions. Accomplished a first and corresponding author publication in PNAS 2017 and identified a new pathway for microRNA processing.
2014-2016	Swapna Kollu, Currently Senior Research Scientist, Oregon Health & Science University, Portland, Oregon
2023-present	Senior postdoc mentor for 2 Dana Farber postdocs, Anne-Florence Blandin, Basudev Chowdhury, Dana Farber Pathfinders program

Committee Service: Local

2011	PQE Graduate Student Committee A. Emerman (RNA transport, M. Blower lab, HMS)	Harvard Medical School
2011	PQE Graduate Student Committee M. Haas (circulating microRNAs, S. Biddinger lab, HMS)	Harvard Medical School
2011	PhD Defense Committee M. Blahna (microRNA uridylation, J. Mizgerd lab, Harvard School of Public Health)	Harvard School of Public Health
2012	PhD Defense Committee M. Janas (alternative microRNPs, Carl Novina lab, HMS)	Harvard Medical School
2013	PhD Defense Committee Z. Shi (Genetic and Genomic analysis of small RNAs, G. Ruvkun lab, HMS)	Harvard Medical School

2013	Senior thesis, J. Cloutier, Human Developmental & Regenerative Biology, Harvard College	Harvard Medical School
2014	Post-doctoral career development grant advisory committee, W. Miles (MGH)	Cancer Center, MGH
2014-2019	Center for Regenerative Medicine, Faculty recruitment committee	Massachusetts General Hospital
2015	Senior thesis, Qaren Quartey, MCB,	Harvard University
2015	Post-doctoral career development grant advisory committee, Y. Jin (MGH, HMS, R. Peterson lab)	Massachusetts General Hospital
2015-2016	Kraft Symposium and Award Presentation Committee	Cancer Center, MGH
2015-2018	DAC Graduate Student Committee E. Carmona (circular RNAs, M.Goldberg lab, HMS)	Harvard Medical School
2016	Post-doctoral career development grant advisory committee, S. Lyons (BWH, HMS, P. Anderson lab)	Brigham & Womens Hospital
2016	PQE Graduate Student Committee S. Coyne (G quadruplexes in disease, P. Anderson lab, HMS)	Harvard Medical School
2017	Cancer Center Seminar Series	Cancer Center, MGH
2017	Basic Science Faculty Recruitment Committee	Cancer Center, MGH
2017	Post-doctoral career development grant advisory committee, K. Daneshvar (MGH, HMS, A. Mullen lab)	Massachusetts General Hospital
2017	PQE Graduate Student Committee T.Lu	Harvard University
2018	Senior thesis, Ethan Plotsker, MCB, Harvard College	Harvard University
2019	Senior thesis, Madeleine Granovetter, MCB, Harvard College	Harvard University
2019	Senior thesis, Jeongmin Lee, Chemistry, Harvard College	Harvard University
2019	Senior thesis, Yue Lin, MCB, Harvard College	Harvard University
2019	PQE grad student M. Mazzola (tiRNAs in hematopoiesis, D. Scadden lab)	Harvard Medical School
2023	Defense committee, Sophie Giguere (Codon bias and tRNA adaptation in antibody production, Facundo D. Batista lab)	Harvard Medical School, Ragon Institute

Regional

2014 MS student thesis committee V. Bhambani, Boston University, authorship in publication in Biorxiv/Cell Chem Biol. Role Thesis and lab Advisor

National

2012 PhD Defense Committee C. Pratt (Translation regulation in oocyte development, Kim Mowry lab, Brown University), External reviewer.

Diversity, Equity, Inclusion, and Accessibility (DEIA) statement

I am committed to advancing (DEIA) in our community with the principles of DEIA fully integrated in every decision. Diversity refers to a variety of experiences, differences, and backgrounds included with equal standing in the same space. Equity acknowledges and measures the systemic inequalities that currently exist, and provides personalized, directed tools to counter-balance these inequities, and ensure equal opportunity for those marginalized. Inclusion does not mean crowding, but rather refers to expansion of and rebuilding non-inclusive systems and spaces, to include all currently omitted minoritized populations by default. Accessibility refers to ensuring that the systems in place are restructured to prevent any negligent exclusion and enable full participation by all, such as those with hidden disabilities. *Our goal is to identify factors that contribute to inequity in our academic community and systematically develop mechanisms to restructure these areas into an inclusive space, and develop systems to enable a community where every person can reach their full potential regardless of race, gender, religion, disability, sexuality, socio-economic hardships, and other forms of underrepresentation.*

Reports overwhelmingly demonstrate that underrepresented academics innovate at higher rates but are routinely discounted. We acknowledge that existing inequities between individuals are not rooted in science or facts. Since our society was structured on many biases, it has led to many systemic inequalities. Given the very evident inequities in the world that continue to impose on women and underrepresented minorities, especially in STEM, I believe that the scientific community has the urgent need and the right strengths, leadership, and community commitment for each of us to take proactive steps to bridge the gap for existing underrepresented groups. Several scientific organizations and institutes such as the NIH, labs, and leaders, provide great role models and resources for how to enhance, retain, and promote a diverse membership in scientific research. By using such successful examples to establish best practices, adapting feedback from our members, and multiple resources (advisors, DEIA experts, societies, funding agencies, minority organizations, and industry), and working with existing strengths of our scientific communities (leaders, programs, committees), we will build inclusive excellence together. There must be zero tolerance for any margin of discrimination, inequity, or abuse. *We will build 3 directions for equitable advancement for personnel at all levels: retention of current diversity with mentoring initiatives, feedback surveys to listen and improve, and resource expansion;*

inclusion with collaborative networks and growth opportunities; diversity expansion via focused recruitment to build inclusive excellence.

To this end, I lead or am involved in diversity, and inclusion committees for many years for: HMS through the JCSW that mentors students, postdocs and junior faculty, HGWISE to enable graduate women students and postdocs to remain in STEM at my institute, CURE DF/HCC and SPARC programs run with NIH support for underrepresented and economically-disadvantaged undergraduate students to experience research on cancer at Harvard and continue on a STEM track, NIH fellows training grant programs, NIGMS COBRE diverse junior faculty training program, and via the Cancer Center DEIA committee at MGH. In 2021, I organized and chair the DEIA committee for the global RNA Society, where my committee runs mechanisms such as climate surveys and minority focus group meetings to understand issues and solutions, and we pioneer inclusive measures such as equity measures for economically and historically marginalized populations, global collaborative and networking forums, DEIA and STEM educational workshops, and minority speaker panels, to foster diversity, and growth opportunities in our scientific community. I also serve as a mentor with a multi-institute collaborative diversity lecture series (DASL) for underrepresented minority scientists. Through DASL, we have been able to obtain funds for trainee parents, especially minorities, to sustain them through financial hardships at our institutes. We are also partnering with industry and academia, to form internships for underrepresented trainees at all levels, to ensure retention in STEM, and their progressive advancement with growth opportunities. We will create related mentoring, networking, inclusion, and advancement programs, and collaborate with institutional and local efforts, for inclusive growth for all personnel in my scientific community. *DEIA will be integrated in every decision, guided by my experiences leading DEIA efforts at my current institute and globally in the RNA field. These efforts will provide support and advancement for marginalized groups, and ensure that our scientific community becomes more equitable and diverse, retains innovative talent, and builds inclusive excellence.*