

CURRICULUM VITAE  
Shobha Vasudevan, PhD

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EDUCATION

Undergraduate 1995 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  
Rutgers University-UMDNJ/RWJMS, NJ  
Laboratory of Dr. Stuart 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-June 2024 Associate Professor, Dept. of Medicine, Harvard Medical School, Boston, MA  
Feb, 2019-June 2024 Associate Investigator, Cancer Center, Massachusetts General Hospital, Boston, MA  
July, 2009-June 2024 Faculty, Center for Regenerative Medicine, Massachusetts General Hospital

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

#### 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

2010-2024 Radiation safety permit officer for Cancer Center 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.  
2011-2024 Life sciences undergraduate research fair. Participate yearly in undergraduate student research fair to inspire and involve more students in research.  
2010-2024 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  
2021-2024 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  
Consulting and provisional agreement circRNA therapeutics, Hilleman 2024  
Consulting and in-kind liquid handler robotic Ntensify equipment, Quantoom, RNA therapeutics, 2024

#### 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. Duttgupta 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 S A*. 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 / 25<sup>th</sup> 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.
- 2024 Targeting post-transcriptional mechanisms of tumor persistence. Quantoom, Andover, 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, 5<sup>th</sup> Microsymposium on small RNAs, IMBA, Vienna, Austria
- 2010 Regulated Gene Expression by microRNPs in quiescent cells, 4<sup>th</sup> 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.
- May 2024 Targeting post-transcriptional mechanisms of tumor persistence. ECI IX Vaccine Technology conference, Invited Speaker and Session cochair, Los Cabos, Mexico.
- June 2024 Invited Awardee for Inclusive Leadership, Annual Meeting of The RNA Society, Edinburgh, Scotland.
- July 2024 Targeting post-transcriptional mechanisms of tumor persistence. Genome Institute of Singapore, RNA Seminar Series, Virtual. With follow up visit in Singapore in Oct 2024

Aug  
2024

Targeting post-transcriptional mechanisms of tumor persistence. Univercells, Belgium  
Virtual.

## GRANTS

### Ongoing

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

### Pending

1. Vasudevan (PI) 04/01/2025-03/30/2030  
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

2. Vasudevan (PI) 06/01/2025-05/30/2030  
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

3. Vasudevan (PI)

06/01/2025-08/31/2027 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 TNF $\alpha$  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 1-2 core courses annually 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 BBS Graduate students (PhD/MD-PhD)	HMS Four 1.5 hour sessions/year
2012	BBS230 Literature Discussion section/seminar, BBS graduate course, HMS BBS Graduate students (PhD/MD-PhD)	HMS One 3 hour session
2014	BCMP200 Lecture, BBS graduate course HMS BBS Graduate students (PhD/MD-PhD)	HMS 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 Hematology-oncology HMS clinical fellows	MGH 1h seminar yearly
2011	Regulated Gene Expression by microRNPs in quiescent cells. Basic Science Seminar Series hematology/oncology fellows at MGH, HMS, Boston	MGH 1h seminar
2012	Regulated Gene Expression by microRNPs in quiescent cells / The basic Science Seminar Series first year hematology/oncology fellows at MGH, HMS, Boston,	MGH 1h seminar
2013	Regulated Gene Expression by RNAs and RNPs in Resistant Cancers. Basic Science Seminar Series with hematology/oncology fellows at MGH, HMS, Boston	MGH 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:

- 2024 June-current** Research mentorship of a CCMB graduate student, Zeynep Kilinc, an MCB graduate student, Paola A. Sundaram Buitrago for their PhDs, and 3 MCB undergraduate students (Olivia Cox, Vidya Iyengar, Elijah Puente) for their senior thesis at Brown University.
- 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, 5<sup>th</sup> 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, 4<sup>th</sup> 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 Joanna 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. Harvard Medical School  
Emerman (RNA transport, M. Blower lab,

	HMS)	
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.*

## **List of Referees**

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