

Sethuramasundaram Pitchiaya

1400, E. Medical Center Dr.
5304, Rogel Cancer Center
Department of Pathology
Michigan Medicine
Ann Arbor, MI 48109-0940
+1 (734) 276-4690
sethu@umich.edu
www.sethupitchiaya.org

PROFESSIONAL APPOINTMENTS

Research Investigator 2017 - Present
Michigan Medicine, Department of Pathology, Ann Arbor, MI, USA

EDUCATION AND TRAINING

Postdoctoral Fellow (Cancer Biology) 2015 - 2017
Michigan Medicine, Ann Arbor, MI, USA
Mentor: Arul M. Chinnaiyan

Postdoctoral Fellow (Molecular and Cell Biology, Instrumentation and Biophysics) 2014 - 2015
University of Michigan, Ann Arbor, MI, USA
Single-molecule analysis in Real-Time (SMART) center
2012 - 2013

Ph.D. in Chemistry (Chemical Biology) 2006 - 2012
University of Michigan, Ann Arbor, MI, USA
Mentor: Nils G. Walter, GPA: 8.0 / 8.0

B.Tech in Industrial Biotechnology 2002 - 2006
Anna University, Chennai, Tamil Nadu, India
GPA: 9.24 / 10.00, (equivalent to) summa cum laude

RESEARCH INTERESTS

Regulation of gene expression
Cancer biology
Single-molecule imaging
Spatially-resolved single-cell omics

FUNDING

Principal Investigator

Idea Development Award 2019 - 2022
Department of Defense (Prostate Cancer Research Program)

Young Investigator Award 2018 - 2021
Prostate Cancer Foundation
<https://www.pcf.org/c/young-investigator-award-class-of-2018/>

SPORE Career Enhancement Award 2017 - 2019
National Cancer Institute

AACR-Bayer Prostate Cancer Research Fellowship 2016 - 2017
American association for Cancer Research
Featured by AACR for Sethu Pitchiaya's promising research:
<http://blog.aacr.org/a-young-chemical-biologist-forges-a-career-path-in-cancer-research/>

Co-Investigator

P30 Supplementary Award (PI: Arul M. Chinnaiyan) National Cancer Institute	2020 - 2021
Michigan Prostate SPORE (PI: Arul M. Chinnaiyan and Ganesh Palapattu) National Cancer Institute	2019 - 2024
Technology Impact Award (PI: Marcin Cieslik) Cancer Research Institute	2019 - 2021
Outstanding Investigator Award (PI: Arul M. Chinnaiyan) National Cancer Institute	2018 - 2025

PUBLICATIONS

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

Citations: 1018, * Equal Contribution, # corresponding author

1. Jaliyal AP*, **Pitchiaya S***, Xiao L, Bawa P, Jiang X, Bedi K, Cieslik M, Ljungman M, Chinnaiyan AM# and Walter NG#, Multivalent proteins rapidly and reversibly phase-separate upon osmotic cell volume change. *bioRxiv* (2019)
2. Shankar S, Tien JC, Siebenaler RF, Chugh S, Dommeti VL, Zelenka-Wang S, Wang XM, Apel IJ, Waninger J, Eyunni S, Xu A, Mody M, Goodrum A, Zhang Y, Tesmer JJ, Mannan R, Cao X, Vats P, **Pitchiaya S**, Shi J, Kumar-Sinha C, Crawford H and Chinnaiyan AM. An Essential Role for Argonaute 2 in EGFR-KRAS Signaling in Pancreatic Cancer Development. *Nature Communications* (2020, accepted)
3. **Pitchiaya S***, Mourao MDA, Jaliyal AP, Xiao L, Jiang X, Chinnaiyan AM, Schnell S and Walter NG#, Dynamic recruitment of single RNAs to processing bodies depends on RNA functionality. *Molecular Cell* (2019), 74:521
Featured in Chowdhury et al., Molecular Cell, 2019 (Perspectives)
4. Parolia A*, Cieslik M*, Chu SC, Xiao L, Ouchi T, Zhang Y, Wang X, Vats P, Cao X, **Pitchiaya S**, Su F, Wang R, Feng FY, Wu YM, Lonigro RJ, Robinson DR and Chinnaiyan AM#. Distinct structural classes of activating FOXA1 alterations in advanced prostate cancer. *Nature* (2019), 571:413
Featured in Stone L, Nature Reviews Urology, 2019 (In Brief)
5. Zhang Y*, **Pitchiaya S***, Cieslik M*, Niknafs YS, Tien JC, Hosono Y, Iyer MK, Yazdani S, Subramaniam S, Shukla SK, Jiang X, Wang L, Liu TY, Uhl M, Gawronski AR, Qiao Y, Xiao L, Dhanasekaran SM, Juckette KM, Kunju LP, Cao X, Patel U, Batish M, Shukla GC, Paulsen MT, Ljungman M, Jiang H, Mehra R, Backofen R, Sahinalp CS, Freier SM, Watt AT, Guo S, Wei JT, Feng FY, Malik R and Chinnaiyan AM#, Analysis of the androgen receptor-regulated lncRNA landscape identifies a role for ARLNC1 in prostate cancer progression, *Nature Genetics* (2018), 50:814
6. Hosono Y*, Niknafs YS*, Prensner JR, Iyer MK, Dhanasekaran SM, Mehra R, **Pitchiaya S**, Tien J, Escara-Wilke J, Poliakov A, Chu SC, Saleh S, Sankar K, Su F, Guo S, Qiao Y, Freier SM, Bui HH, Cao X, Malik R, Johnson TM, Beer DG, Feng FY, Zhou W and Chinnaiyan AM#, Oncogenic Role of THOR, a Conserved Cancer/Testis Long Noncoding RNA. *Cell* (2017), 171:1559
7. Michelini F, **Pitchiaya S**, Vitelli V, Sharma S, Gioia U, Pessina F, Cabrini M, Wang Y, Capozzo I, Iannelli F, Matti V, Francia S, Shivashankar GV, Walter NG and d'Adda di Fagagna F#, Damage-induced lncRNAs control the DNA damage response through interaction with DDRNAs at individual double-strand breaks. *Nature Cell Biology* (2017), 19:1400
Featured in Storici et al., Nature Cell Biology, 2017 (News & Views)
8. **Pitchiaya S**, Heinicke LA, Park JI, Cameron E and Walter NG#, Resolving sub-cellular miRNA trafficking and turnover at single-molecule resolution. *Cell Reports* (2017), 19:630
9. Wang X, Qiao Y, Asangani IA, Ateeq B, Poliakov A, Cieslik M, **Pitchiaya S**, Chakravarthi BVS, Cao X, Jing X, Wang CX, Apel IJ, Wang R, Tien JC, Juckette KM, Yan W, Jiang H, Wang S, Varambally S and Chinnaiyan AM#, Development of peptidomimetic inhibitors of the ERG gene fusion product in prostate cancer. *Cancer Cell* (2017), 31:532

10. Rossiello F, Aguado J, Sepe S, Iannelli F, Nguyen Q, **Pitchiaya S**, Carninci P and d'Adda di Fagagna F[#], DNA damage response inhibition at dysfunctional telomeres by modulation of telomeric DNA damage response RNAs. *Nature Communications* (2017), 8:13980

11. Niknafs YS*, Han S*, Ma T, Speers C, Zhang C, Wilder-Romans K, Iyer MK, **Pitchiaya S**, Malik R, Hosono Y, Prensner JR, Poliakov A, Singhal U, Xiao L, Kregel S, Siebenaler RF, Zhao SG, Uhl M, Gawronski A, Hayes DF, Pierce LJ, Cao X, Collins C, Backofen R, Sahinalp CS, Rae JM, Chinnaiyan AM[#] and Feng FY[#], The lncRNA landscape of breast cancer reveals a role for DSCAM-AS1 in breast cancer progression. *Nature Communications* (2016), 7:12791

12. Shankar S, **Pitchiaya S**, Malik R, Kothari V, Hosono Y, Yocum AK, Gundlapalli H, White Y, Firestone A, Cao X, Dhanasekaran SM, Stuckey JA, Bollag G, Shannon K, Walter NG, Kumar-Sinha C and Chinnaiyan AM[#], KRAS engages AGO2 to enhance cellular transformation. *Cell Reports* (2016), 14:1448
Featured in Kiberstis PA, Science, 2016 (Editor's choice)

13. Nyati S, Schinske-Sebolt K, **Pitchiaya S**, Chekhovskiy K, Chator A, Chaudhry N, Dosch J, Van Dort ME, Varambally S, Kumar-Sinha C, Nyati MK, Ray D, Walter NG, Yu H, Ross BD and Rehemtulla A[#], The kinase activity of the Ser/Thr kinase BUB1 promotes TGF- β signaling. *Science Signaling* (2015), 8:ra1
Featured in Moustakas et al., Science Signaling, 2015 (Focus) and Barcellos-Hoff MH, Neoplasia, 2015 (Commentary)

14. Bartke RM, Cameron EL, Cristie-David AS, Custer TC, Denies MS, Daher M, Dhakal S, Ghosh S, Heinicke LA, Hoff JD, Hou Q, Kahlscheuer ML, Karlake J, Krieger AG, Li J, Li X, Lund PE, Vo NN, Park J, **Pitchiaya S**, Rai V, Smith DJ, Suddala KC, Wang J, Widom JR and Walter NG[#], Meeting report: SMART timing-principles of single molecule techniques course at the University of Michigan 2014. *Biopolymers* (2015), 103:296

15. **Pitchiaya S***, Heinicke LA*, Custer TC* and Walter NG[#], Single molecule fluorescence approaches shed light on intracellular RNAs. *Chemical Reviews* (2014), 114:3224
Featured in F1000 prime

16. **Pitchiaya S**, Krishnan V, Custer TC and Walter NG[#], Dissecting non-coding RNA mechanisms in cellulo by single molecule high resolution localization and counting. *Methods* (2013), 63:188

17. Ma J, Liu Z, Michelotti N, **Pitchiaya S**, Veerapaneni RS, Androsavich JR, Walter NG and Yang W[#], High-resolution three-dimensional mapping of mRNA export through the nuclear pore. *Nature Communications* (2013), 4:2414

18. **Pitchiaya S**, Androsavich JR and Walter NG[#], Intracellular single molecule microscopy reveals two kinetically distinct pathways for microRNA assembly. *EMBO reports* (2012), 13:709

19. Kuszak AJ, **Pitchiaya S**, Anand JP, Mosberg HI, Walter NG and Sunahara RK[#], Purification and functional reconstitution of monomeric μ -opioid receptors: Allosteric modulation of agonist binding by Gi2. *Journal of Biological Chemistry* (2009), 284:26732

20. **Pitchiaya S** and Krishnan Y[#], First blueprint, now bricks: DNA as construction material on the nanoscale. *Chemical Society Reviews* (2006), 35:1111

Book Chapters

1. **Pitchiaya S***, Androsavich JR* and Walter NG[#], Breaking Abbe's law: Super-accuracy and super-resolution fluorescence microscopy based on single molecule detection. *Imaging Life: Biological Systems from Atoms to Tissues* (Howard, G.C., Brown, W.E. and Auer, M., Eds.). *Oxford University Press* (2014), ISBN: 9780195314434

PATENTS AND DISCLOSURES OF INVENTIONS

1. Cieslik M and Pitchiaya S, TCR-FISH: A Novel Method for Spatially and Clonally Resolved Profiling of Tumor-Infiltrating Lymphocytes. Invention disclosure filed with the University of Michigan's Office of Technology Transfer, filed Feb 2020

2. Chinnaiyan AM, Pandian B and **Pitchiaya S**, Spatial Registration Software for Adaptive Imaging. Invention disclosure filed with the University of Michigan's Office of Technology Transfer, filed June 2018

3. Chinnaiyan AM, Malik R, Zhang Y, Cieslik M and **Pitchiaya S**, Compositions and methods for treating cancer / ARInC1 in Prostate Cancer Progression. U.S. Provisional Patent Application No. 62/655,308, filed April 2018

AWARDS AND HONORS

Young investigator award, Prostate Cancer Foundation	2018
AACR-Bayer prostate cancer research fellowship	2016
Travel fellowship, RNA Society	2014
Travel fellowship, Cold Spring Harbor Laboratory	2013
Travel fellowship, RNA Society	2012
Best poster award , Vaughan symposium, University of Michigan	2011
Travel grant , Rackham graduate school, University of Michigan	2010
Travel grant , Rackham graduate school, University of Michigan	2009
Best poster award , Vaughan symposium, University of Michigan	2008
Summer research fellowship , National Center for Biological Sciences, India	2005
Summer research fellowship , National Center for Biological Sciences, India	2004

PRESENTATIONS

Invited Talks

Cancer Institute (WIA), Chennai, India	2020
Indian Institute of Science, Bangalore, India	2018
Indian Institute of Science Education and Research, Pune, India	2014
National Center for Biological Sciences, Bangalore, India	2014
Indian Institute of Technology, Chennai, India	2014
Principles of Single Molecule Techniques, Ann Arbor, MI, USA	2014
Zing – Nucleic Acids Conference, Playa del Carmen, Quintana Roo, Mexico	2012

Selected Talks

Gordon-Merck Research Seminar- Post Transcriptional Gene Regulation, Newport, RI, USA	2014
Annual Meeting of the RNA Society, Ann Arbor, MI, USA	2012
Rustbelt RNA Meeting, Dayton, OH, USA	2011

Invited Posters

SPORE – Prostate Cancer Meeting, Ft. Lauderdale, FL, USA	2019, 2018, 2016
PCF Retreat, Carlsbad, CA, USA	2019, 2018
HHMI Meeting, Janelia Farms, Ashburn, VA, USA	2016

Selected Posters

Keystone Symposia on Bimolecular Condensates, Snowbird, UT, USA	2019
AACR Annual Meeting, Chicago, IL, USA	2018, 2017
Keystone Symposia on Noncoding RNAs, Keystone, CO, USA	2018
Gordon Research Conference – Post transcriptional gene regulation, Newport, RI, USA	2014
CSHL Meeting on Eukaryotic mRNA Processing, Cold Spring Harbor, NY, USA	2013
The Vaughan Symposium (PECRUM), Ann Arbor, MI, USA	2011, 2008
Annual Meeting of the RNA Society, (Seattle, WA; Madison, WI), USA	2010, 2009

Experimental Biology Conference (ASBMB), New Orleans, LA, USA

2009

TEACHING AND MENTORSHIP EXPERIENCE

- Research Mentor, University of Michigan (26 trainees)** 2007 - Present
Undergraduate students (8): Patel N, Coleski A, Raskind G, Stoldt M, D'Silva J, Park JI, Doxtader KA and Agostini M; *Graduate students(16):* Strand E, Siebenaler R, Islam M, Jalihal A, Denies M, Cameron E, Joiner C, Park I, Arthur E, Haynes C, Brumbaugh A, Leslie R, Sripathi K, Krishnan V, Androsavich JA and Marek MS; *Postdoctoral fellow(1):* Narayanan SP; *Technical assistant(1):* Jiang X
- Graduate Student Instructor, University of Michigan** 2006 - 2007
Lab and lecture: CHEM 215/216 Organic Chemistry-II, instructed 37 students
Lecture: CHEM 130 General Chemistry, instructed 91 students

PROFESSIONAL SERVICES

- Reviewer:** Small, European Urology, Nucleic Acids Research, Nanoscale, Angewandte Chemie, PLoS one, Molecules, International Journal of Molecular Sciences, Medicine, Biomarker Insights, Innovation and Technology Support Program (Hong Kong), Central European Journal of Biology, Journal of Infection in Developing Countries 2014 - Present
- Workshop Coordinator:** Principles of Single Molecule Techniques Workshop, University of Michigan 2015
- Member:** Graduate recruitment activities, Department of Chemistry, University of Michigan 2014 - 2015

PROFESSIONAL AFFILIATIONS

- Member:** American Association of Biochemistry and Molecular Biology 2019 - Present
- Member:** American Association for the Advancement of Science 2016 - Present
- Member:** American Association of Cancer Research 2015 - Present
- Member:** Biophysical Society 2012 - Present
- Member:** RNA Society 2009 - Present

OUTREACH

- Volunteer:** ACS-Huron Valley Division, Hands-on Chemistry Demo Day, MI, USA 2012
- Volunteer:** ASHA for Education – Non-Profit Organization, Ann Arbor, MI USA 2007 - 2012