

## CURRICULUM VITAE

### MINGYI XIE

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### EDUCATION

- 2010 Ph.D., **Arizona State University**, Tempe, Arizona  
Major: Biochemistry
- 2004 B.S., **Xiamen University**, Xiamen, China  
Major: Biology

### RESEARCH EXPERIENCE

- 2022–present Associate Professor (with tenure)
- 2016–2022 Assistant Professor  
Department of Biochemistry and Molecular Biology  
**University of Florida**, Gainesville, Florida
- 2010–2016 Postdoc Fellow with **Dr. Joan A. Steitz**  
Department of Molecular Biophysics and Biochemistry  
**Yale University**, New Haven, Connecticut
- 2005–2010 Graduate Research Assistant with **Dr. Julian J.L. Chen**  
Department of Chemistry and Biochemistry  
**Arizona State University**, Tempe, Arizona
- 2002 –2004 Undergrad Research Assistant  
Ministry of Education Key Laboratory for Coastal and Wetland Ecosystems  
**Xiamen University**, China

### RESEARCH GRANTS

#### **Active**

- 2023–2028 **National Cancer Institute**. R01 (Contact PI)  
“Exploring microRNA degradation in T-cell acute lymphoblastic leukemia.”
- 2023–2028 **NIGMS**. Maximizing Investigator’s Research Award R35 (PI)  
“Molecular Mechanisms for regulating microRNA levels in metazoans.”
- 2022–2026 **American Cancer Society**. Research Scholar Award (PI)  
“MicroRNA turnover induced by target RNAs in colorectal cancer.”
- 2022–2023 **National Institute of Aging**. Alzheimer’s Disease Supplement (PI)
- 2021–2024 **Florida Department of Health**. Live like Bella Pediatric Cancer Initiative (PI)  
“Target RNAs induce microRNA degradation in apoptotic T-cell acute lymphoblastic leukemia cells.”

#### **Pending**

- 2024–2026 **National Cancer Institute**. R21 (PI)  
“The molecular basis of 7SK RNA methylation in non-small cell lung cancer.”  
*Impact score 10, 1 percentile, council meeting in 10/2023*

#### **Completed**

- 2021–2023 **UF Health Cancer Center**. CTHR Pilot Grant (co-PI)
- 2018–2023 **NIGMS**. Maximizing Investigator’s Research Award R35 (PI)
- 2021–2022 **The Elsa U. Pardee Foundation**. Research Grant (PI)

- 2020–2021 **Brown Foundation.** Research Grant (PI)  
2018–2020 **University of Florida.** Research Opportunity Seed Fund (Contact PI)  
2018–2020 **Thomas H. Maren Foundation.** Junior Faculty Award (PI)  
2014–2019 **National Cancer Institute.** Pathway to Independence Award, K99/R00 (PI)  
2012–2015 **Leukemia and Lymphoma Society.** Postdoctoral Fellowship (PI)  
2010–2011 **Leslie H. Warner Cancer Research Foundation.** Postdoctoral Fellowship

## TEACHING EXPERIENCE

- 2019-present Lecturer, Advanced Gene Regulation (course number: BCH7410)  
2018-present Lecturer, Graduate Program in Biomedical Sciences core course (GMS6001)  
2017-present Lecturer, Advanced Molecular and Cellular Biology (BCH6415)  
2017-present Lecturer, Eukaryotic Molecular Biology and Genetics (BCH5413)  
2016-present Thesis committee member of 28 Ph.D graduate students (graduated 10) and 8 master's students (graduated 6)  
2016-present Mentor of 5 postdoctoral fellows, 5 Ph.D graduate students (graduated 2), 2 master's students (graduated 2), 19 undergraduate students and 1 high school student  
Department of Biochemistry and Molecular Biology  
**University of Florida**, Gainesville, Florida  
2011–2016 Mentor of two graduate students and three undergraduates  
Joan Steitz Lab, Department of Molecular Biophysics and Biochemistry  
**Yale University**, New Haven, Connecticut  
2005–2010 Mentor of four undergraduates  
Julian Chen Lab, Department of Chemistry and Biochemistry  
2007–2010 Teaching assistant, Analytical Biochemistry Lab (BCH467)  
2005–2006 Teaching assistant, Elementary Biochemistry Lab (BCH367)  
Department of Chemistry and Biochemistry  
**Arizona State University**, Tempe, Arizona

## SERVICES

### *External*

- 2024 American Cancer Society, RNA mechanism in Cancer, ad hoc reviewer  
2023 NIH Study section MRAF, ad hoc reviewer  
2023 NIH Study section GRIC, ad hoc reviewer  
2023-present Editorial board member of the Journal of Biological Chemistry  
2022 NIH Study section ZAG1 ZIJ-G (J1), ad hoc reviewer  
2022 NIH Study section ZAG1 ZIJ-G (J2), ad hoc reviewer  
2020-present Annual meeting of the RNA Society, poster judge  
2019 Worldwide Cancer Research Foundation, ad hoc reviewer  
2016-present Reviewer for the journals: *Molecular Cell*, *the EMBO Journal*, *PNAS*, *Nature Communications*, *Science advances*, *Genome Research*, *Nucleic Acids Research*, *PLOS pathogens*, *Molecular Therapy Nucleic Acids*, *Journal of Molecular Cell Biology*, *Frontier in Genetics*, *Journal of Molecular Medicine*, *Cancer Biology & Therapy*, and *BioTechniques*

### *Internal*

- 2023-present College of medicine, *R01 boot camp coach*  
2023 College of medicine, *Faculty onboarding ambassador* for Dr. Zhipeng Li  
2023-present Department of Biochemistry and Molecular Biology, *Faculty mentor* for Dr. Chen Zhao  
2022-present Department of Molecular Genetics and Microbiology, *external Faculty mentor* for Dr. Zhe Ma

2022-present College of medicine, *Internal scientific review committee member*  
2022-present Department of Biochemistry, *Faculty search committee member*  
2022-present College of medicine Ph.D. *student admissions committee, Representative for the Biochemistry concentration*  
2021 Department of Biochemistry, *Chair search committee member*  
2020-2023 College of medicine, *Faculty council member*  
2020-2022 Genetics & Genomics graduate admission, *committee member & interviewer*  
2019 University Graduation Ceremony, *Marshal*  
2018-present BMB Department undergraduate research day, *co-organizer*  
2018,2020 International Brainstorm symposium, *Session chair*  
2018 Genetics & Genomics Graduate admission, *Faculty interviewer*  
2018-2020 Center for NeuroGenetics, *Faculty search committee member*  
2018 UF Graduate student research day, *Poster judge*  
2017-present College of medicine Ph.D. student admission, *Faculty interviewer*  
2017-2018 UF Health Cancer Center faculty recruitment, *Presenter and Faculty sponsor*

## HONORS

2023 UF International Educator of the Year, College of Medicine nominee.  
2020, 2023 Exemplary Teacher Award. College of Medicine, University of Florida.  
2009 Outstanding Graduate Research Assistant in Biochemistry  
Arizona State University, Tempe, Arizona  
2003 Award for Advanced Individual in Extra-curricular Scientific and Technological Activity  
School of Life Sciences, Xiamen University, China

## PUBLICATIONS

### *Research Articles (first- or corresponding-author publications)*

1. C.M. Traugot, J. Effinger-Morris T. Li, N.M. Hiers, L. Li and **M. Xie**, Examine RNA abundance and molecular weight using high sensitivity northern blots. under review in **Methods in Molecular Biology**
2. Y. Zhou\*, P. Sheng\*, **M. Xie**# and A.A. Green#. Conditional RNA interference in mammalian cells via RNA transactivation. in revision for **Nature Communications**
3. Y. Wang, C.M. Traugot, J. Bubenik, T. Li, P. Sheng, N.M. Hiers, L. Li, J. Bian, M.S. Swanson and **M. Xie**. N<sup>6</sup>-methyladenosine in 7SK small nuclear RNA underlies RNA Polymerase II transcription regulation. **Molecular Cell**, 83 (21), 3818-3834 (2023).
4. T. Li, W. Zhang and **M. Xie**, Fluorescent in situ detection of RNA-Protein interactions in intact cells by RNA-PLA. **Methods in Molecular Biology**, 2666, 165-175 (2023).
5. P. Sheng\*, L. Li\*\*#, T. Li, Y. Wang, N.M. Hiers, J.S. Mejia, J.S. Sanchez, L. Zhou# and **M. Xie**#, Screening of *Drosophila* microRNA degradation sequences reveals Argonaute1 mRNA's role in miR-999 regulation. **Nature Communications**. 14 (1), 2108 (2023).
6. C.J. Fields, L. Li, N.M. Hiers, T. Li, P. Sheng, T. Huda, J. Shan, L. Gay, T. Gu, J. Bian, M.S. Kilberg, R. Renne and **M. Xie**, Sequencing of Argonaute-bound microRNA/mRNA hybrids reveals regulation of the unfolded protein response by microRNA-320a. **PLOS Genetics**, 17 (12), e1009934 (2021).
7. L. Li\*, P. Sheng\*, T. Li, C.J. Fields, N.M. Hiers, Y. Wang, J. Li, C.M. Guardia, J. D. Licht and **M. Xie**, Widespread microRNA degradation elements in target mRNAs can assist the encoded proteins. **Genes & Development**, 35 (23-24), 1595-1609 (2021).

8. D. Stribling\*, Y. Lei\*, C.M. Guardia\*, L. Li, C.J. Fields, P. Nowialis, R. Opavsky, R. Renne# and **M. Xie**#, A non-canonical microRNA derived from the snaR-A non-coding RNA targets a metastasis inhibitor. *RNA*, 27 (6), 694-709 (2021).
9. P. Sheng, K.A. Flood and **M. Xie**, Short hairpin RNAs for strand-specific small interfering RNA production. *Frontiers in Bioengineering & Biotechnology*, 8, 940 (2020).
10. C.J. Fields, P. Sheng, B.R. Miller, T. Wei and **M. Xie**, Northern blot with IR-labeled probes using various labeling approaches. *Bio-protocol*, 9 (8), e3219 (2019).
11. B.R. Miller\*, T. Wei\*, P. Sheng, C.J. Fields and **M. Xie**, Near-infrared fluorescent Northern blot. *RNA*, 24 (12), 1871-1877 (2018).
12. P. Sheng, C.J. Fields, K. Aadland, T. Wei, O. Kolaczowski, T. Gu, B. Kolaczowski# and **M. Xie**#, Dicer cleaves 5'-extended microRNA precursors originating from RNA Polymerase II transcription start sites. *Nucleic Acids Research*, 46 (11), 5737-5752 (2018).
13. W. Zhang\*, **M. Xie**\*, M. Shu, J.A. Steitz and D. DiMaio, A proximity-dependent assay for specific RNA-protein interactions in intact cells. *RNA*, 22 (11), 1785-1792 (2016).
14. **M. Xie**, W. Zhang, M. Shu, A. Xu, D. Lenis, D. DiMaio and J.A. Steitz, The host Integrator complex acts in transcription-independent maturation of herpesvirus microRNA 3' ends. *Genes & Development*, 29 (14), 1552-1564 (2015).
15. **M. Xie**, M. Li, A. Vilborg, N. Lee, M. Shu, V. Yartseva, N. Sestan and J.A. Steitz, Mammalian 5'-capped microRNA precursors that generate a single microRNA. *Cell*, 155 (7), 1568-1580 (2013).
16. X. Qi\*, **M. Xie**\*, A.F. Brown\*, C.J. Bley, J.D. Podlevsky and J.J.-L. Chen, RNA/DNA hybrid binding affinity determines telomerase template translocation efficiency. *EMBO Journal*, 31 (1), 150-161 (2012).
17. **M. Xie**, J.D. Podlevsky, X. Qi, C.J. Bley and J.J.-L. Chen, A novel motif in telomerase reverse transcriptase regulates telomere repeat addition rate and processivity. *Nucleic Acids Research*, 38 (6), 1982-1996 (2010).
18. **M. Xie**, A. Mosig, X. Qi, Y. Li, P.F. Stadler and J.J.-L. Chen, Structure and function of the smallest vertebrate telomerase RNA from teleost fish. *Journal of Biological Chemistry*, 283 (4), 2049-2059 (2008).

### **Collaborative Research Articles**

1. C. Liang, M. Huang, M. Tanaka, S. Lightsey, M. Temples, S.E. Lepler, P. Sheng, W.P. Mann, A.E. Widener, D.W. Siemann, B. Sharma, **M. Xie**, Y. Dai, E. Phelps E, B. Zeng# and X. Tang#. Functional Interrogation of Ca<sup>2+</sup> Signals in Human Cancer Cells In Vitro and Ex Vivo by Fluorescent Microscopy and Molecular Tools. *Methods in Molecular Biology*, 2679, 95-125 (2023).
2. C. Gobin, S. Inkabi, C.C. Lattimore, T. Gu, J.N. Meneffee, M. Rodriguez, H. Kates, C.J. Fields, T. Bian, N. Silver, C. Xing, C. Yates, R. Renne, **M. Xie** and K.M. Fredenburg, Investigating miR-9 as a mediator in laryngeal cancer health disparities. *Frontiers in Oncology*, 13: 1096882, (2023).
3. T. Gu, **M. Xie**, W.B. Barbazuk and J.-H. Lee, Biological features between miRNAs and their targets are unveiled from deep learning models. *Scientific Reports*, 11 (1), 23825 (2021).
4. A. Gurusurthy, D. Yu, J.R. Stees, P. Chamales, E. Gavrilova, P. Wassel, L. Li, D. Stribling, J. Chen, M. Brackett, A. Ishov, **M. Xie** and J. Bungert, Super-enhancer mediated regulation of adult  $\beta$ -globin gene expression: the role of eRNA and Integrator. *Nucleic Acids Research*, 49 (3), 1383-1396 (2021).
5. P. Nowialis\*, K. Lopusna\*, J. Opavska, S. L. Haney, A. Abraham, P. Sheng, A. Riva, A. Natarajan, O. Guryanova, M.Simpson, R. Hlady, **M. Xie** and R. Opavsky, Catalytically

- inactive Dnmt3b rescues mouse embryonic development by accessory and repressive functions. *Nature Communications* 10 (1), 4374 (2019).
6. K.E. Hayes, J.A. Barr, **M. Xie**, J.A. Steitz and I. Martinez, Immunoprecipitation of Trimethylated Capped RNA. *Bio-protocol*, 8 (3), e2717 (2018).
  7. I. Martinez, K. Hayes, J. Barr, A. Harold, **M. Xie**, S.I.A. Bukhari, S. Vasudevan, J. A. Steitz and D. DiMaio, A novel Exportin-1-dependent microRNA biogenesis pathway during human cell quiescence. *Proc. Natl. Acad. Sci. U.S.A.*, 114 (25), 4961-4970 (2017).
  8. A.F. Brown, J.D. Podlevsky, X. Qi, Y. Chen, **M. Xie** and J.J.-L. Chen, A self-regulating template in human telomerase. *Proc. Natl. Acad. Sci. U.S.A.*, 111 (31), 11311-11316 (2014).
  9. C. Qiao, J. Ma, J. Xu, **M. Xie**, W. Ma and Y. Huang, Drosha mediates destabilization of Lin28 mRNA targets. *Cell Cycle*, 11 (19), 3590-3598 (2012).
  10. D. Cazalla, **M. Xie** and J.A. Steitz, A primate Herpesvirus uses the Integrator complex to generate viral microRNAs. *Molecular Cell*, 43 (6), 982-992 (2011).
  11. J.K. Alder, J.J.-L. Chen, L. Lancaster, S. Danoff, S.C. Su, M. Prince, I. Vulto, **M. Xie**, X. Qi, R.M. Tuder, J.A. Phillips, P.M. Lansdorp, J.E. Loyd, and M.Y. Armanios, Short telomeres are a risk factor for idiopathic pulmonary fibrosis. *Proc. Natl. Acad. Sci. U.S.A.* 105 (35), 13051-13056 (2008).
  12. Y. Xiang, **M. Xie**, R. Bash, J.J.-L. Chen, and J. Wang, Ultrasensitive label-free aptamer-based electronic detection. *Angew. Chem. Int. Ed.*, 46 (47), 9054-9056 (2007).
  13. M. Armanios, J.J.-L. Chen, W.E. Lawson, J.K. Alder, R.G. Ingersoll, C. Markin, **M. Xie**, J. Cogan, J.A. Phillips III, P.M. Lansdorp, C.W. Greider and J.E. Loyd, Telomerase mutations in families with idiopathic pulmonary fibrosis. *New England Journal of Medicine*, 356 (13), 1317-1326 (2007).
  14. C. Lin, **M. Xie**, J.J.-L. Chen, Y. Liu, and H. Yan, Rolling-circle amplification of a DNA nanojunction. *Angew. Chem. Int. Ed.*, 45 (45), 7537-7539 (2006).

### Review and Commentary Articles

1. M. Huang, H. Wang, C. Mackey, M.C. Chung, J. Guan, G. Zheng, A. Roy, **M. Xie**, C. Vulpe and X. Tang, YAP at the Crossroads of Biomechanics and Drug Resistance in Human Cancer. *International Journal of Molecular Sciences*, 24 (15), 12491 (2023).
2. M.D. Gibbons, Y. Fang, A.P. Spicola, N. Linzer, S.M. Jones, B.R. Johnson, L. Li, **M. Xie** and J. Bungert, Enhancer mediated formation of nuclear transcription initiation domains. *International Journal of Molecular Sciences*, 23 (16), 9290 (2022).
3. Y. Qi\*, L. Ding\*, **M. Xie**# and P. Du#, RDR1-mediated broad antitumor response: a novel strategy manipulating miRNAs as a powerful weapon. *Life Medicine*, Inac007 (2022).
4. C. Liang\*, M. Huang\*, T. Li\*, L. Li\*, H. Sussaman, Y. Dai, D. Siemann, **M. Xie**# and X. Tang#, Towards an Integrative Understanding of Cancer Mechanobiology: Calcium, YAP, and microRNA under Biophysical Forces. *Soft Matter*, 18 (6), 1112-1148 (2022).
5. **M. Xie** and J. Bungert, When Pol II sees red. *Blood*, 138 (18), 1648-1649 (2021).
6. **M. Xie** and M.S. Swanson, UTteR control through miRs: fine-tuning ATXN1 levels to prevent ataxia. *Genes & Development*, 34 (17-18), 1107-1109 (2020).
7. K.T. Tycowski\*, Y.E. Guo\*, N. Lee\*, W.N. Moss\*, T.K. Vallery\*, **M. Xie**\* and J.A. Steitz, Viral noncoding RNAs: more surprises. *Genes & Development*, 29 (6), 567-584 (2015).
8. **M. Xie**# and J.A. Steitz, Versatile microRNA biogenesis in animals and their viruses. *RNA biology*, 11 (6), 673-681 (2014).

(\* equal contribution; # co-corresponding authors)

## ORAL PRESENTATIONS

### Conference talks

1. m<sup>6</sup>A in 7SK snRNA underlies Pol II transcription regulation. Y. Wang, C.M. Traugot, J. Bubenik, T. Li, P. Sheng, N.M. Hiers, L. Li, J. Bian, M.S. Swanson and **M. Xie**. *The 28<sup>th</sup> annual meeting of the RNA Society*, Singapore, May 30-June 3, 2023.
2. Small non-coding RNA regulation in cancer. *Florida academic cancer center alliance meeting*, Miami, FL March 27-28, 2023.
3. When microRNAs CLASH with their targets. *Florida genetics symposium* at the University of Florida, Gainesville, FL, November 2-3, 2022.
4. The target-directed microRNA degradation interactome in cancer. L. Li, P. Sheng, T. Li, C.J. Fields, N.M. Hiers, Y. Wang, J. Li, C.M. Guardia, J. D. Licht and **M. Xie** (p.82) *The 27<sup>th</sup> annual meeting of the RNA Society* at the University of Colorado at Boulder, Boulder, CO, May 31-June 5, 2022.
5. Dicer cleaves 5'-extended microRNA precursors originating from RNA Polymerase II transcription start sites. P. Sheng, C. Fields, K. Aadland, T. Wei, O. Kolaczowski, T. Gu, B. Kolaczowski and **M. Xie** (p.29) *The 23<sup>rd</sup> annual meeting of the RNA Society* at University of California at Berkeley, Berkeley, CA, May 29-June 3, 2018.
6. The Integrator complex generates the 3' end of viral microRNA precursors in a primate Herpesvirus. **M. Xie**, M. Shu, A. Xu, D. Lenis and J. Steitz. (p. 76, flash talk) *RNA biology conference* at Cold Spring Harbor Asia, Suzhou, China, November 10-14, 2014.
7. Mammalian 5'-capped microRNA precursors that generate a single microRNA. **M. Xie**, M. Li, A. Vilborg, N. Lee, M. Shu, V. Yartseva, N. Sestan and J. Steitz. (p. 55A) *The 19<sup>th</sup> annual meeting of the RNA Society* at Laval University, Quebec City, Canada, June 3-8, 2014.
8. Mammalian 5'-capped microRNA precursors that generate a single microRNA *The 11<sup>th</sup> International Therapeutics Discovery Symposia* at Hilton Garden Inn, Waltham, MA, May 5-6, 2014.
9. A Herpesvirus uses the Integrator complex to generate viral microRNAs. **M. Xie**, D. Cazalla and J. A. Steitz. (p. 136) *Eukaryotic mRNA processing meeting* at Cold Spring Harbor Laboratory, NY, August 23-27, 2011.

### Invited external seminars

1. (TBD) Regulation of small non-coding RNAs. **Emory University**, Atlanta, GA, May 2, 2024.
2. (TBD) Regulation of small non-coding RNAs. **Ohio State University**, Columbus, OH, March 28, 2024.
3. Regulation of small non-coding RNAs. **UT Health-Houston**, Houston, TX, September 25, 2023.
4. Regulation of small non-coding RNAs. **Duke-National University of Singapore**, Singapore, June 1, 2023.
5. Small non-coding RNA regulation in cancer. **Moffitt Cancer Center**, Tampa, FL, (virtual) May 9, 2023.
6. When microRNAs CLASH with their targets. **University of Pittsburgh**, Pittsburgh, PA, December 14, 2022.
7. When microRNAs CLASH with their targets. **National Institute of Health**, Bethesda, MD, October 6, 2022.
8. The birth and death of microRNAs: from virus to host. **University of Utah**, Salt Lake City, UT, (virtual) April 21, 2021.
9. The birth and death of microRNAs: from virus to host. **University of Maryland**, College Park, MD, (virtual) April 9, 2021.

10. Transcription start site microRNAs & Near-infrared fluorescent northern blot. **University of Arkansas**, Fayetteville, AR, March 26, 2019.
11. Transcription start site microRNAs & Near-infrared fluorescent northern blot. **Yale University**, New Haven, CT, March 6, 2019.
12. Non-canonical microRNA biogenesis: from an oncogenic Herpesvirus to its mammalian host. **Soochow University**, Suzhou, China, November 10, 2014.
13. Non-canonical microRNA biogenesis: from an oncogenic Herpesvirus to its mammalian host. **Huazhong Agricultural University**, Wuhan, China, October 14, 2014.
14. Non-canonical microRNA biogenesis: from an oncogenic Herpesvirus to its mammalian host. **Institute of Hydrobiology, Chinese Academy of Sciences**, Wuhan, China, October 13, 2014.