

## Antony M Jose

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### Employment

2017-now Associate Professor, Department of Cell Biology and Molecular Genetics,  
University of Maryland, College Park, MD, USA  
2021-2024 Director, Molecular and Cell Biology Concentration Area – Biological Sciences Grad Program  
2011-2017 Assistant Professor, Department of Cell Biology and Molecular Genetics,  
University of Maryland, College Park, MD, USA

### Education

2005-2011 Post-Doc, Harvard University, Cambridge, MA, USA  
1999-2005 Ph. D., Yale University, New Haven, CT, USA  
1995-1999 B. Tech., Anna University, Chennai, TN, India

### Awards and Honors

#### *Grants/Fellowships*

2024 Administrative Supplement for R01, NIGMS, NIH  
2023 Administrative Supplement for R01, NIGMS, NIH  
2022 Renewal of R01 Research Project Grant, NIGMS, NIH (2022 – 2026)  
2021 Mid-Career Advancement Grant, NSF (2021 - 2024)  
2021 Faculty-Student Research Award, UMD (2021 summer)  
2020 Teaching Innovation Grant, UMD (for re-design of BSCI432) [[news article](#)]  
2020 Brain Behavior Initiative Seed Grant, UMD (83% Co-PI: 2020 – 2021)  
2018 Biotechnology Risk Assessment Grant, USDA (5% Co-PI: 2018 – 2022)  
2018 R01 Research Project Grant, NIGMS, NIH (2018 – 2022)  
2017 Tier 1 Faculty Incentive Program, UMD (2017)  
2015 First-Year Innovation & Research Experience Grant, UMD (2016 – 2021)  
2014 R01 Research Project Grant, NIGMS, NIH (2014 – 2020 with no cost extension)  
2011 Research and Scholarship Award, UMD (for Summer 2012)  
2011 Wellcome Trust/DBT India Alliance Fellowship for starting PIs (gratefully declined)  
2010 K99/R00 Pathway to Independence Award, NIGMS, NIH (2010 - 2014)  
2006 American Heart Association Postdoctoral Fellowship (2006 - 2009)

#### *Other Awards*

2019 Graduate Faculty Mentor of the Year, UMD  
2016 National Academy of Sciences Kavli Fellow  
2015 Elevate Fellow, UMD (for re-design of BSCI330)  
2010 Keystone Symposia Scholarship: RNA silencing – Mechanism & Biology  
2009 Postdoctoral Travel Award, Harvard University  
2008 Keystone Symposia Scholarship: RNAi, Micro RNA, and non-coding RNA  
2006-2011 Board of Tutors in Biochemical Sciences, Harvard University  
2004 Robert Macnab Memorial Best Poster Award (Mol. Biophys. & Biochem. department)  
2001 Best Poster Award (Mol. Cell. & Dev. Biol. department)  
1998 Astra Summer Research Fellowship

### Teaching

#### *Courses*

2023 fall-now CBMG626: Quantitative Modeling for Experimental Biologists – graduate course  
2020 fall-now BSCI432: Systems View of Cell Biology – undergraduate course  
2019 fall BSCI348: Integrating systems concepts in cell biology – undergraduate course

2013-2020 CBMG688N: Write Science Using the Movies – graduate course  
 2013-2017 BSCI330: Cell Biology and Physiology – undergraduate course  
 2012 fall CBMG688D: Cell Biology I: Structure and Function – graduate course  
 2010 Mini course on *C. elegans*, Harvard University (spring & fall semesters)  
 2006-2011 Board of Tutors in Biochemical Sciences, Harvard University

#### *Guest Lectures*

2025 spring 'Knowability, inference, and generating hypotheses' in CBMG688F: Gene Expression  
 2024 spring 'Knowability and inference' in CBMG688F: Gene Expression  
 2023 fall 'Write, edit, repeat' in BIS1701: Teaching Science & Professional Development in Biology  
 2023 spring 'Knowability and inference' in CBMG688F: Gene Expression  
 2022 fall 'Write, edit, repeat' in BIS1701: Teaching Science & Professional Development in Biology  
 2022 spring 'Knowability and inference' in CBMG688F: Gene Expression  
 2021 fall 'Write, edit, repeat' in BIS1701: Teaching Science & Professional Development in Biology  
 2021 spring 'Knowability and inference' in CBMG688F: Gene Expression  
 2020 spring 'Knowledge and illusions of knowledge' in CBMG688U: Rigor and Reproducibility in Research  
 2020 spring 'Knowledge and illusions of knowledge' in CBMG688F: Gene Expression  
 2019 spring 'Heritable information in living systems' in CBMG688O: Role of ignorance in science  
 2017 spring 'Epigenetics and the logic of life' in CBMG688O: Role of ignorance in science  
 2016 spring 'Epigenetics – going after unknown unknowns' in CBMG688O: Role of ignorance in science  
 2015 spring 'Epigenetics – known unknowns and unknown unknowns' in CBMG688O: Role of ignorance in science  
 2014 spring '*C. elegans* as a model system' in CBMG688I: Genetic Analysis – graduate course

#### **Research Program for Undergraduates**

2015-2021 First-Year Innovation & Research Experience - *Transgenerational Brain Initiative*: Every year ~35 undergraduates worked to discover which of the 302 neurons of *C. elegans* are the best exporters of RNA to the germline. A postdoctoral fellow from my lab, Yun Choi, led this effort as Assistant Clinical Professor with support from UMD for start up, extra lab space, and salary.

2024-now First-Year Innovation & Research Experience – *Gene Silencing* [<https://www.fire.umd.edu/gs>]: Every year ~30 undergraduates will work to predict the durations of transgenerational gene silencing based in features of a gene and experimentally test the predictions. A recent graduate from my lab, Mary Chey, is leading this effort as Assistant Clinical Professor with support from UMD for start up, extra lab space, and salary.

#### **Professional Activities**

2024-2028 National Institutes of Health, Standing Member, Study Section  
 2024-now Editorial Board Member, NPJ Systems Biology and Applications  
 2023 National Science Foundation, panel member [8 grants]  
 2023 National Science Center, Poland, ad hoc reviewer  
 2023 National Institutes of Health, study section member [8 grants]  
 2022 National Science Foundation, ad hoc reviewer [3 grants]  
 2021 John Templeton Foundation, ad hoc reviewer  
 2018 *C. elegans* Stress, pathogenesis, aging, metabolism & small RNA Talk Selection Committee  
 2017 Expert for extracellular RNA NIH Common Fund Program Phase II  
 2016-2018 Associate Editor, Molecular Reproduction & Development  
 2016 Co-chair of RNAi, microRNAs, and Developmental timing session, & Organizing Committee Member, *C. elegans* Genetics, The Allied Genetics Conference  
 2016 National Institutes of Health panelist for R15 grants  
 2016-now Member, American Society of Cell Biology  
 2015-now Member, RNA Society  
 2015 Discussion leader for Transgenerational Inheritance session, Gordon Research Conference on Developmental Biology  
 2014-2017 Biochemistry Judge, Siemens Competition in Math, Science & Technology (Annual national competition for high school students)  
 2014 Maryland Industrial Partnerships technical reviewer

2013 National Science Foundation pre-proposals panelist  
 2013 German-Israeli Foundation ad hoc reviewer  
 2013 European Research Council ad hoc reviewer  
 2012, -13, -15 National Science Foundation ad hoc reviewer  
 2012 Co-Chair of a session & Organizing Committee Member, Aging, Metabolism, Stress, Pathogenesis and small RNAs: *C. elegans* "Topics" Meeting  
 2011 Co-Chair, Gene Regulation and Genomics Session, 18<sup>th</sup> International *C. elegans* Meeting  
 2010-now Member, Genetics Society of America  
 2007 Selection Committee for Lawrence J Henderson Best Thesis Award, Harvard University

## **Talks**

### *Invited Seminars*

2024 Computational and Applied Mathematics Colloquium, Penn State University, PA  
 2024 National Center for Biological Sciences, Bangaluru, KA, India [2 talks]  
 2023 Leonardo Art and Science Rendezvous Talks, Stanford University, CA over zoom (see ~20 min. talk and Q&A at: <https://www.youtube.com/watch?v=-sYIO3hbev8>)  
 2022 Department of Biological Sciences, University of Delaware, DE  
 2021 Ashoka University, Haryana, India  
 2020 Cell Biology and Molecular Genetics, University of Maryland, MD (see ~30 min. talk at: [https://science.umd.edu/cbmg/joselab/Rethinking\\_Heredity\\_Video.html](https://science.umd.edu/cbmg/joselab/Rethinking_Heredity_Video.html))  
 2019 Center for Computational Biology & Bioinformatics, University of Delaware, DE  
 2019 Santa Fe Institute, Santa Fe, NM  
 2019 Cambridge RNA Club, Gurdon Institute, University of Cambridge, UK  
 2019 Conference on Information Processing and Computing, LICET, Chennai, India  
 2019 Center for Cellular and Molecular Biology, Hyderabad, India  
 2018 Indian Institute of Science Education and Research, Pune, India  
 2018 Indian Institute of Science, Bangaluru, India  
 2018 Bioscience Day, University of Maryland, MD (see ~40 min. talk at: <https://www.youtube.com/watch?v=702TDkUWINA>)  
 2018 West Virginia University, WV (Education talk: "Write Science Using the Movies")  
 2018 West Virginia University, WV  
 2018 Illumina Inc., San Francisco, CA  
 2018 University of California, San Francisco, CA  
 2017 Tel Aviv University, Tel Aviv, Israel  
 2017 Technion, Haifa, Israel  
 2017 National Institute of Child Health and Development, NIH, Bethesda, MD  
 2017 Information transmission in small RNA pathways, Royal Society of Edinburgh, UK  
 2016 20<sup>th</sup> German-American Kavli Frontiers of Science Symposium, Germany (see ~15 min. talk at: <https://vimeo.com/159820978>)  
 2016 Tata Institute of Fundamental Research, Mumbai, India  
 2016 1<sup>st</sup> Indian *C. elegans* Meeting, Lonavala, India  
 2015 College of William & Mary, Williamsburg, VA (Education talk: "Write Science Using the Movies")  
 2015 Eastern Virginia Med. School, Norfolk, VA (Education talk: "Write Science Using the Movies")  
 2015 Johns Hopkins University, Dept. of Biochemistry and Molecular Biology, Baltimore, MD  
 2015 Gordon Research Conference: Fertilization & Activation of Development, Holderness, NH  
 2014 Gettysburg College, Gettysburg, PA (Education talk: "Write Science Using the Movies")  
 2014 University of Utah, Salt Lake City, UT  
 2014 National Institutes of Health RNA Club, Bethesda, MD  
 2013 Gettysburg College, Gettysburg, PA  
 2012 Bioscience Day, University of Maryland, MD (see ~30 min. talk at: <https://www.youtube.com/watch?v=4CoyxeD-uls>)  
 2012 George Washington University, Washington, DC  
 2012 Catholic University of America, Washington, DC  
 2012 National Institute of Diabetes and Digestive and Kidney diseases, Bethesda, MD  
 2011 Howard University, Washington, DC  
 2011 University of Maryland, College Park, MD

2010 National Center for Biological Sciences, Bangalore, India  
2010 University of Massachusetts, Amherst, MA  
2008 Alnylam Pharmaceuticals, Cambridge, MA

### *Meeting Presentations*

2024 Metabolism, Aging, Pathogenesis, Stress and Small RNAs in *C. elegans*, Madison, WI  
2024 *C. elegans* small RNA meeting, Todos Santos, Mexico  
2019 Gordon Research Conference: Developmental Biology, South Hadley, MA  
2019 *C. elegans* small RNA meeting, Todos Santos, Mexico  
2015 Gordon Research Conference: Epigenetic Dynamics, Waltham, MA  
2015 Gordon Research Conference: Developmental Biology, South Hadley, MA  
2012 *C. elegans* meeting on Aging, Metabolism, Pathogenesis, Stress, and Small RNAs, University of Wisconsin, WI  
2011 18<sup>th</sup> International *C. elegans* meeting, UCLA, Los Angeles, CA  
2011 Non-coding RNA, epigenetic memory, and the environment, London, UK  
2010 Boston Area Worm Meeting, MIT, Cambridge, MA  
2004 New York Area Worm Meeting, Rockefeller University, New York, NY  
2000 The RNA Club, Yale University, New Haven, CT

### **Publications**

#### *Preprints*

1. Chey, M., Raman, P., Etefa, F., and Jose, A. M. Evidence for multiple forms of heritable RNA silencing. *bioRxiv* <https://doi.org/10.1101/2024.04.28.591487> (Online on 4/28/2024).
2. Tasnim, S., Liu, A., and Jose, A.M. Reliable odorant sensing but variable associative learning in *C. elegans*. *bioRxiv* <https://www.biorxiv.org/content/10.1101/2024.11.26.625480v1> (Online on 11/26/2024).

#### *Published*

1. Shugarts Devanapally, N., Sathya, A., Yi, A.L., Chan, W.M., Marré, J.A., and Jose, A.M. (2025) Intergenerational transport of double-stranded RNA in *C. elegans* can limit heritable epigenetic changes. **eLife**, 13, RP99149. (Online on 10/6/2021, bioRxiv).  
News reports on this work were published on many websites, including [Bioengineer.org](https://www.bioengineer.org) and [Technology Networks](https://www.technologynetworks.com).
2. Lalit, F. and Jose, A. M. (2025) Selecting genes for analysis using historically contingent progress: from RNA changes to protein-protein interactions. **Nucleic Acids Res.** 53(1): gkae1246. (Online on 5/3/2024, bioRxiv).  
This study and similar studies that examine historical progress to select new genes for analysis were highlighted in [Nature](https://www.nature.com).
3. Knudsen, D.R., Raman, P., Etefa F., DeRavin L., and Jose, A.M. (2024) Target-specific requirements for RNA interference can arise through restricted RNA amplification despite the lack of specialized pathways. **eLife**, 13, RP97487 (Online on 2/8/2023, bioRxiv). [with *eLife* digest]  
News reports on this work were published on many websites, including [Maryland Today](https://www.marylandtoday.com) and [Science Daily](https://www.sciencedaily.com).
4. Jose, A.M. (2024) Heritable epigenetic changes are constrained by the dynamics of regulatory architectures. **eLife** 12: RP92093 (Online on 6/9/2023, bioRxiv).
5. Chey, M. and Jose, A.M. (2022) Heritable epigenetic changes at single genes: challenges and opportunities in *Caenorhabditis elegans*. **Trends Genet.** 38(2):116-119.
6. Devanapally\*, S., Raman\*, P., Chey, M., Allgood, S., Etefa, F., Diop, M., Lin, Y., Cho, Y.E., and Jose, A.M. (2021) Mating can initiate stable RNA silencing that overcomes epigenetic recovery. **Nat. Commun.** 12:4239. (Online on 1/7/2020, bioRxiv). \*equal contribution.  
News reports on this work were published on many websites, including [Maryland Today](https://www.marylandtoday.com), [Technology Networks](https://www.technologynetworks.com), and [What is epigenetics?](https://www.whatisepigenetics.com).



7. Galford, K.F. and Jose, A.M. (2020) The FDA-approved drugs ticlopidine, sertaconazole, and dexlansoprazole can cause morphological changes in *C. elegans*. **Chemosphere** 261:127756. (Online on 4/11/2020, bioRxiv).  
See associated [press release](#) and interview of undergraduate Kyle Galford on [17 minutes of Science](#).
8. Jose, A.M. (2020) The analysis of living systems can generate both knowledge and illusions. **eLife**. 9:e56354.
9. Jose, A.M. (2020) A framework for parsing heritable information. **J. R. Soc. Interface**. 17:20200154. (Online on 3/20/2020, arXiv).  
News reports on this work were published on many websites, including [Maryland Today](#), [LabRoots.com](#), [Genetic Engineering & Biotechnology News](#), [phys.org](#) (a top story of the week), and others around the world (e.g., [Galileu](#) in Brazil, [ABC](#) in Spain, [Trust My Science](#), editorial in [RTFlash: Recherche et Technologie](#) and one of '60 new ways to see the world' in [Science & Vie](#) in France, [Evolution Tree](#) in Turkey, [4everScience](#) in Ukraine, [BioNews](#) in the UK). It sparked discussions among diverse groups (e.g., [Hacker News](#), [Uncommon Descent](#), and [Phys.org](#)) and has been highlighted in the book [The embodied mind: understanding the mysteries of cellular memory, consciousness, and our bodies](#).
10. Jose, A.M. (2020) Heritable epigenetic changes alter transgenerational waveforms maintained by cycling stores of information. **BioEssays**. 42, 1900254. [This paper was co-published with complementary work presented in Jose AM, J. R. Soc. Interface, 2020.]
11. Ravikumar, S., Devanapally, S., and Jose, A.M. (2019) Gene silencing by double-stranded RNA from *C. elegans* neurons reveals functional mosaicism of RNA interference. **Nucleic Acids Res.** 47(19):10059-71. (Online on 8/16/2018 with revisions on 7/27/2019, BioRxiv).  
News articles describing this work were published on many websites including [University of Maryland's website](#), [TechnologyNetworks.com](#), [The Southern Maryland Chronicle](#), [Genetic Engineering & Biotechnology News](#), and [BioOptics World](#). Highlighted on [NIGMS image gallery](#).
12. Jose, A.M. (2018) Replicating and cycling stores of information perpetuate life. **BioEssays**. 40(4): 1700161. (Online on 6/14/2017 with revisions on 7/30/2017 and 8/26/2017, BioRxiv). [[Inside front cover](#)].
13. Raman, P., Zaghaf, S., Traver, E.C., and Jose, A.M. (2017) The double-stranded RNA binding protein RDE-4 can act autonomously during feeding RNAi in *C. elegans*. **Nucleic Acids Res.** 45(14):8463-73. (Online on 12/2/2016, BioRxiv).
14. Choi, Y.S., Edwards, L.O., DiBello, A., and Jose, A.M. (2017) Removing bias against short sequences enables northern blotting to better complement RNA-seq for the study of small RNAs. **Nucleic Acids Res.** 45(10):e87. (Online on 8/16/2016, BioRxiv).
15. Marre J. and Jose, A. (2017) Inheritance of extracellular nutrition and information in *Caenorhabditis elegans*. **Mol. Reprod. Dev.** 84(4):283.
16. Marré, J.A., Traver, E.C., and Jose, A.M. (2016) Extracellular RNA is transported from one generation to the next in *C. elegans*. **Proc. Natl. Acad. Sci. USA**. 113(14):12496-501. [[Highlighted in This Week in PNAS](#)].  
News articles describing this work were published on many websites including [BioTechniques News](#), [University of Maryland's website](#), [Epigenie.com](#), [LabRoots.com](#), and [Genetic Engineering & Biotechnology News](#).
17. Le, H.H., Looney, M., Strauss, B., Bloodgood, M., and Jose, A.M. (2016) Tissue homogeneity requires inhibition of unequal gene silencing during development. **J. Cell Biol.** 214(3): 319-331. [[Highlighted as the In Focus article of the issue](#)]  
News articles describing this work were published on many websites including [University of Maryland's website](#).
18. Blumenfeld, A. L. and Jose, A. M. (2016). Reproducible features of small RNAs in *C. elegans* reveal NU RNAs and provide insights into 22G RNAs and 26G RNAs. **RNA**. 22(2): 184-92.

This work was highlighted in [RNA-Seq blog](#). All software developed for this paper is available as the [PACER \(Programs for Analysis of C. elegans small RNAs\)](#) suite.

19. [Jose, A. M.](#) (2015). Movement of regulatory RNA between animal cells. **Genesis**. 53(7): 395-416.
20. [Devanapally, S.](#), [Ravikumar, S.](#), and [Jose, A. M.](#) (2015). Double-stranded RNA made in *C. elegans* neurons can enter the germline and cause transgenerational gene silencing. **Proc. Natl. Acad. Sci. USA**. 112(7): 2133-8. [*Highlighted in [This Week in PNAS](#) and [Science Signaling](#)*]  
News articles describing this work were published on many websites including [University of Maryland's website](#), [the Diamondback newspaper](#), [Epigenie.com](#), and [Biomedical picture of the day](#). Highlighted in [She has her mother's laugh](#), one of New York Times 100 Notable books of 2018 - read summary in [The Atlantic](#).
21. [Jose, A. M.\\*](#), [Kim, Y. A.\\*](#), [Leal-Ekman, S.](#), and [Hunter, C. P.](#) (2012). Conserved tyrosine kinase promotes the import of RNA silencing into *C. elegans* cells. **Proc. Natl. Acad. Sci. USA**. 109(36): 14520-5. \*equal contribution.  
Undergraduate Yunsoo Kim recognized with [Henderson Prize and Hoopes prize](#) for her thesis work leading up to the paper.
22. [Jose, A. M.](#), [Garcia, G.](#), and [Hunter, C. P.](#) (2011). Two classes of silencing RNAs move between *C. elegans* tissues. **Nat. Struct. Mol. Biol.** 18(11): 1184-8.  
News articles describing this work were published in the [Harvard Gazette](#) and on the [Harvard MCB website](#).
23. [Jose, A. M.](#), [Smith, J. J.](#), and [Hunter, C. P.](#) (2009). Export of RNA silencing from *C. elegans* tissues does not require the RNA channel SID-1. **Proc. Natl. Acad. Sci. USA**. 106(7): 2283-8.  
A news article describing this work was published on the [Harvard MCB website](#).
24. [Jose, A. M.](#) and [Hunter, C. P.](#) (2007). Transport of sequence-specific RNA interference information between cells. **Annu. Rev. Genet.** 41, 305-30.
25. [Jose, A. M.](#), [Chase, D. L.](#), [Bany, I. A.](#), and [Koelle, M. R.](#) (2007). A specific subset of TRPV channel subunits in *Caenorhabditis elegans* endocrine cells function as mixed heteromers to promote neurotransmitter release. **Genetics**. 175(1), 93-105. [*Recommended by Faculty of 1000*]
26. [Jose, A. M.](#) and [Koelle, M. R.](#) (2005). Domains, amino acid residues, and new isoforms of the *C. elegans* diacylglycerol kinase DGK-1 crucial for the termination of DAG signaling *in vivo*. **J. Biol. Chem.** 280(4), 2730-2736.
27. [Jose, A. M.](#), [Soukup, G. A.](#), and [Breaker, R. R.](#) (2001). Cooperative binding of effectors by an allosteric ribozyme. **Nucleic Acids Res.** 29, 1631-1637. [*cover story*]