

JEFFREY VEDANAYAGAM

NIH Pathway to Independence Fellow
Developmental Biology Program
Sloan Kettering Institute
Memorial Sloan Kettering Cancer Center
430 E 67th Street New York, NY 10065

☎ (585) 955-3468

✉ vedanayj@mskcc.org

🌐 <http://github.com/jvedanay>

🌐 <http://www.anti-sense.org>

- Education** Ph.D., Evolutionary genetics/genomics, University of Rochester, USA, 2016
Dissertation: *Evolutionary Genomics of piRNA Mediated Transposon Silencing in Drosophila*
Committee: Drs. Daniel Garrigan (advisor), Daven Presgraves, Thomas Eickbush and Justin Blumenstiel
- M.S., Biology, University of Rochester, USA, 2011
- M.Sc., Genomics, Madurai Kamaraj University, India, 2007
Thesis: *Evolutionary Trails of Two Ancient Dravidian Populations in Southern India: Insights from the Non-recombining Y Chromosome and Human Leukocyte Antigen Diversity*
- B.Sc., Biology & Biotechnology, Loyola College, University of Madras, India, 2005
- Other: Peer-review trainee, GSA Peer-Review Training Program, 2019–2022
- Research Experience** Postdoctoral Research Fellow, Sloan-Kettering Institute, 2016–till date
Mentor: [Eric C. Lai, Ph.D.](#) Co-mentor: [Scott Keeney, Ph.D.](#)
K99 advisors: [Kelly Dyer, Ph.D.](#) (UGA) and [Li Zhao, Ph.D.](#) (Rockefeller University)
Research Assistant, Centre for DNA Fingerprinting & Diagnostics, India 2007–2009
- Grants, Honors, & Awards** K99/R00 Pathway to Independence award, National Institutes of Health, 2021–2025
Doctoral Dissertation Improvement Grant, National Science Foundation, 2012–2015
Travel Award, Society for Molecular Biology & Evolution, 2022
Travel Award, Department of Biology, University of Rochester, 2015
Graduate Student Association Travel Award, University of Rochester, 2015
Graduate Student Teaching Award, University of Rochester, 2014
Travel Award, Cold Spring Harbor Laboratory, 2013 & 2014
Ernst Caspari Fellowship, University of Rochester, 2009
Summer Research Fellowship, University of Madras, 2005
- Publications** *Manuscripts in submission/pre-print*
14. **Vedanayagam J.***, Herbet M.*, Mudgett H., Lin C., Gunasinghe H., McDonough-Goldstein C., Dorus S., Loppin B., Meiklejohn C., Dubrulle R., Lai E.C. [Essential and recurrent roles for endogenous RNAi to silence *de novo* sex chromosome conflict \(in submission\)](#) *co-first authors
 13. **Vedanayagam J.**, Lin C., Papareddy R., Nodine M., Flynt A., Wen J., Lai E.C. [Endogenous RNAi silences a burgeoning sex chromosome arms race](#) *Biorxiv* 504821v1

12. Signor S., **Vedanayagam J.**, Wierzbicki F., Kofler R., Lai E.C. [Rapid evolutionary diversification of *flamenco* locus in the *D. simulans* clade](#) *Biorxiv* 510127v2

Peer-reviewed publications

11. Shang R., Kretov A.D., Adamson S.I., Treiber T., Treiber N., **Vedanayagam J.**, Chuang J.H., Meister G., Cifuentes D., Lai E.C. 2022. [Regulated dicing of *pre-mir-114* via reshaping of its terminal loop](#) *Nucleic Acids Res.* 50(13): 7637-7654
10. **Vedanayagam J.***, Lin C., Lai E.C. 2021. [Rapid evolutionary dynamics of an expanding family of meiotic drive factors and their hpRNA suppressors](#) *Nature Eco. & Evol.* 5(12):1613-1623 *co-corresponding author
News & Views: Vogan. A.A. [A flurry of sex-ratio distorters](#) *Nature Eco. & Evol.* 5(12): 1574-1575
9. Chakraborty M., Chang C., Khost E., **Vedanayagam J.**, Adrion J., Montooth K., Meiklejohn C., Larracuente A., Emerson J.J. 2021. [Evolution of genome structure in the *Drosophila simulans* species complex](#) *Genome Research* 31:1-17
8. **Vedanayagam J.**, Askoy B.M., Chalita W., Majumdar S., Skanderup A.J., Fieldhouse R.J., Lee W., Demir E., Ciriello G., Schultz N., Marks D.S., Sander C., Lai E.C. 2019. [Cancer-associated mutations in RNaseIIIa and IIIb domains of DICER1 exert similar effects on miRNA biogenesis](#) *Nature Comm.* 10:3682
7. Meiklejohn C.D., Landeen E.L., Gordon K.E., Rzatkievicz T., Kingan S.B., Geneva A.J., **Vedanayagam J.**, Muirhead C.A., Garrigan D., Stern D.L., Presgraves D.C. 2018. [Gene flow mediates the role of sex chromosome meiotic drive during complex speciation](#) *elife* 7:e35468
6. Lin C., Hu F., Dubruille R., **Vedanayagam J.**, Wen J., Smibert P., Loppin B., Lai E.C. 2018. [The hpRNA/RNAi pathway is essential to resolve intragenomic conflict in the *Drosophila* male germline](#) *Dev. Cell* 46:316-326
Article preview: Blumenstiel J.P and Meiklejohn C.D. [RNAi Doxxes segregation distorters on the X](#) *Dev. Cell* 46:251-253
5. Kondo S*, **Vedanayagam J.***, Mohammed J., Eizadshenass S., Kan L., Pang N., Aradhya R., Siepel A., Steinhauer J., Lai E.C. 2017. [New genes often acquire male-specific functions but rarely become essential in *Drosophila*](#) *Genes & Dev.* 31:1841–1846 *co-first authors
Article highlight: Nyberg K.G and Carthew R.W. [Out of testis: biological impacts of new genes](#) *Genes & Dev.* 31:1825-1826
4. Kan L., Grozhik A.V., **Vedanayagam J.**, Patil D.P., Pang N., Lim K., Huang Y., Joseph B., Lin C., Despic V., Guo J., Yan D., Kondo S., Deng W., Dedon P.C., Jaffrey S.R., Lai E.C. 2017. [The m6A pathway facilitates sex determination in *Drosophila*](#) *Nature Comm.* 8:15737
3. **Vedanayagam J.** and Garrigan D. 2015. [The Effects of Natural Selection Across Molecular Pathways in *Drosophila melanogaster*](#) *BMC Evol Biol* 15:203.

Peer-reviewed publications continued....

2. Garrigan D., Kingan S.B., Geneva A.J., **Vedanayagam J.**, and Presgraves D.C. 2014. [Genome Diversity and Divergence in *Drosophila mauritiana*: Multiple Signatures of Faster X Evolution](#) *Genome Biol Evol* 6(9): 2444–2458.
1. Nandineni M.R., and **Vedanayagam J.** 2009. [Selective Enrichment of Human DNA from non-Human DNA for DNA Typing of Decomposed Skeletal Remains](#) *Forensic Sci Int Gene Suppl* 2(1): 520–521.

Seminars/ Talks

Department of Biology, E2G2 seminar series, University of Rochester, April 2022
 Department of Biology, Texas A&M University, February 2022
 Icahn School of Medicine at Mount Sinai, January 2019
 Fly Club Meeting, Sloan-Kettering Institute, October 2018
 Department of Developmental Biology, Sloan-Kettering Institute, November 2017
 RNA Therapeutics Institute, University of Massachusetts Medical School, July 2015
 Department of Molecular Biology & Genetics, Cornell University, June 2015
 Department of Developmental Biology, Sloan-Kettering Institute, April 2015
 New York Genome Center, January 2015
 Department of Biology, University of Rochester, January 2014
 Wellcome Trust Centre for Human Genetics, University of Oxford, April 2008

Conference Presentations

(P)–Poster / (T)–Talk
 MBG/BiRC Young Investigator Symposium, Aarhus University, November 2022 (T)
 Stowers Institute Genetics and Genomics Conference, Kansas City, October 2022 (T)
 SMBE Evolution of Reproduction Satellite Meeting, Portugal, July 2022 (T)
 3rd ICGB conference, Madurai Kamaraj University, March 2022 (T)
 Vienna Biocenter, 15th Microsymposium on small RNAs, April 2021 (T)
 Gordon Research Conference Meiosis in Quarantine, June 2020 (T)
 New York Area Population Genomics Workshop, NYU, January 2020 (P)
 Society for Molecular Biology and Evolution Meeting, Manchester, July 2019 (T)
 New York Area Population Genomics Workshop, Mount Sinai, January 2019 (T)
 Regulatory and non-coding RNA meeting, CSHL, New York, May 2018 (P)
 56th Annual *Drosophila* Research Conference, Chicago, March 2015 (P)
 New York Area Population Genomics Workshop, New York, January 2015 (T)
 Regulatory and non-coding RNA meeting, CSHL, New York, August 2014 (P)
 Regional Meeting on Mobile Genetic Elements, CSHL, New York, October 2013 (P)
 54th Annual *Drosophila* Research Conference, Washington D.C., April 2013 (P)
 Society for Molecular Biology and Evolution Meeting, Dublin, June 2012 (T)

Teaching

Teaching Assistant, Department of Biology, University of Rochester
 BIO111P, Introductory Biology Lab: *Spring: 2010, 2013, and 2014.*
 BIO113P, Advanced Biology Lab: *Spring: 2011.*

Guest lecturer for BIO472: Genomic Conflict and Selfish Genetic Elements
Two lectures for the Advanced Ecology & Evolutionary Biology course taught by Prof. Thomas Eickbush.

Teaching continued.....

Instructor, Rochester Scholars Program, University of Rochester, July–August, 2013
Developed and taught a course for high school students titled 'Genes and genomes: Why is DNA the secret molecule of life?'

Upward bound tutor for high school students, David T. Kearns center for Leadership and Diversity, University of Rochester, January 2012–May 2012

Service

Journal Referee: *PLoS Genetics, Genetics, Frontiers in Molecular Biosciences, G3*
 Grant Referee: *Sigma Delta Epsilon graduate women in science fellowship*
 Other: *Member, Library Advisory Committee, University of Rochester 2014–2015*

Research Funding

National Institutes of Health (NIGMS-K99GM137077), September 2021–August 2025
PI: Vedanayagam J.
Title: Selfish meiotic drive and the role of RNAi in defending intragenomic conflict

National Science Foundation (DEB-1209536), April 2012–May 2015
PI: Garrigan D. (co-PI: Vedanayagam J.)
Title: Evolutionary Genomics of piRNA Mediated Transposon Silencing in Drosophila

Professional Member-ships

Society for Molecular Biology and Evolution 2011–Present
 Genetics Society of America 2012–Present
 The New York Academy of Sciences 2011–Present

Mentoring

Alexander Stein, Research Technician (June 2022–till date)
 Julia Johnson, Undergraduate trainee (June 2022–August 2022)
 Himari Gunasinghe, Research Technician (*now at Weill Cornell, NY*)
 Gillian Lin, Graduate student (*now at Admera Health, NJ*)
 Jaeah Kim, High school student (*now at Stanford University, CA*)
 Will Khomtchenko, Summer trainee (*now at University of Tennessee, TN*)

References

Dr. Eric C. Lai
 Member and Professor
 Developmental Biology Program
 Sloan-Kettering Institute
 e-mail: laie@mskcc.org

Dr. Scott Keeney
 Member and Professor
 Molecular Biology Program
 HHMI/Sloan-Kettering Institute
 e-mail: KeeneyS@mskcc.org

Dr. Daven Presgraves
 Dean's Professor
 Department of Biology
 University of Rochester
 e-mail: daven.presgraves@rochester.edu

Dr. Colin Meiklejohn
 Associate Professor
 School of Biological Sciences
 University of Nebraska Lincoln
 e-mail: cmeiklejohn2@unl.edu