

# JEFFREY VEDANAYAGAM

Sloan Kettering Institute,  
1001E Rockefeller Research Labs,  
430 E 67th Street,  
New York, NY 10065

☎ (585) 955-3468  
✉ [jeffreypratap@gmail.com](mailto:jeffreypratap@gmail.com)  
🌐 <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–Present

## Research Experience

Postdoctoral Research Fellow, Sloan-Kettering Institute, 2016–till date.

Mentor: [Eric C. Lai, Ph.D.](#) Co-mentor (K99 training): [Scott Keeney, Ph.D.](#)

K99 external 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, 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

*Peer-reviewed publications*

**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.* (in press) \*co-corresponding author

- 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
- 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
- Meiklejohn C.D., Landeen E.L., Gordon K.E., Rzatkiwicz 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
- 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
- Kondo S\*, **Vedanayagam J.\***, Mohammed J., et al. 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
- Kan L., Grozhik A.V., **Vedanayagam J.**, Patil D.P., et al. 2017. [The m6A pathway facilitates sex determination in \*Drosophila\*](#) *Nature Comm.* 8:15737
- Vedanayagam J.** and Garrigan D. 2015. [The Effects of Natural Selection Across Molecular Pathways in \*Drosophila melanogaster\*](#) *BMC Evol Biol* 15:203.
- 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.
- 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

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.

*Seminars/Talks continued.....*

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)–Platform*

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).  
 56<sup>th</sup> 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).  
 54<sup>th</sup> 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, University of Rochester, March 2014

*Two lectures for the Advanced Ecology & Evolutionary Biology course taught by Prof. Thomas Eickbush.*

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  
review**

*Journal Referee:* PLoS Genetics; GSA Early-Career reviewer for Genetics; G3.

*ad hoc Referee:* eLife; Dev. Cell; Nat. Comm.; Genome Res.; Cell Reports

*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  
Memberships

Society for Molecular Biology and Evolution 2011–Present

Genetics Society of America 2012–Present

The New York Academy of Sciences 2011–Present

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. Adam Siepel  
Professor and Director  
Simons Quantitative Biology Center  
Cold Spring Harbor Laboratory  
e-mail: asiepel@cshl.edu

Dr. Robert Minckley  
Professor of Instruction  
Department of Biology  
University of Rochester  
e-mail: robert.minckley@rochester.edu

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