

# Swathi Nachiar Manivannan

PhD candidate in Ecology and Evolutionary Biology, Yale University  
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*I am an evolutionary biologist interested in understanding the underlying mechanisms that shape the capacity of microbes to adaptively evolve.*

## EDUCATION

<b>PhD in Ecology and Evolutionary Biology</b> <b>Yale University</b> Proposed thesis: <i>The path(s) to optimality: towards a mechanistic understanding of evolvability in (pathogenic) microbes</i> Thesis Committee: C. Brandon Ogbunugafor (advisor), Richard O. Prum, Günter P. Wagner, Jeremy Draghi	08/2022—present (Expected May 2028) New Haven, CT, USA
<b>MS in Ecology and Evolutionary Biology</b> <b>Yale University</b>	08/2022—12/2024 New Haven, CT, USA
<b>BA (Hons) in Natural Sciences (Genetics)</b> <b>Homerton College, University of Cambridge</b> Thesis: <i>The genetics of hybridisation: What systems biology-based models can tell us</i> (Advised by John J. Welch)	10/2018—06/2021 Cambridge, UK

## RESEARCH EXPERIENCE

<b>Graduate Research Fellow</b> (PI: C. Brandon Ogbunugafor) <b>Department of Ecology &amp; Evolutionary Biology, Yale University</b>	08/2022—present
<b>Research Officer</b> (PI: Sebastian Maurer-Stroh) <b>Bioinformatics Institute, A*STAR, Singapore</b>	02/2022—06/2022
<b>Research Officer</b> (PI: Swaine Chen) <b>Genome Institute of Singapore, A*STAR, Singapore</b>	07/2021—01/2022
<b>Undergraduate Research (Part II Genetics) Student</b> (PI: John J. Welch) <b>University of Cambridge</b>	11/2020—03/2021
<b>Undergraduate Research Student</b> (PI: Simon A. Levin) <b>International Student Internship Program, Princeton University</b>	06/2020—09/2020
<b>Undergraduate Research Student</b> (PI: Wei Leong Chew) <b>Genome Institute of Singapore, A*STAR, Singapore</b>	07/2019—08/2019

## HONOURS AND AWARDS

Sterling Prize Fellowship, Yale University	2022
A*STAR National Science Scholarship (PhD)	2022
David Thompson Scholarship, Homerton College, University of Cambridge	2019
A*STAR National Science Scholarship (BS)	2018

## GRANTS

Yale Institute for Biospheric Studies (YIBS) Small Early Grant (\$3000)	2023
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## PUBLICATIONS

### Peer-reviewed articles

2. **Manivannan, S.N.**, Levin, S.A. (2023). *Modelling the evolutionary dynamics of an infectious disease with an initial asymptomatic stage with recovery*. SIAM Undergraduate Research Online (SIURO), Volume 16.
1. Chen, L., Park, J.E., Paa, P., Rajakumar, P.D., Prekop, H-T., Chew, Y.T., **Manivannan, S.N.**, & Chew, W.L. (2021). *Programmable C:G to G:C genome editing with CRISPR-Cas9-directed base excision repair proteins*. Nature Communications, 12(1).

## In review

2. **Manivannan, S.N.**, Diaz Arenas, C., Grubaugh, N.D., Ogbunugafor, C.B. *The importance of epistasis in the evolution of viral pathogens.*
1. Surasinghe, S., **Manivannan, S.N.**, Scarpino, S.V., Crawford, L., & Ogbunugafor, C.B. *Structural causal influence (SCI) captures the forces of social inequality in models of disease dynamics.*

## Magazine article(s)

2. **Manivannan, S.N.** *The construction of a metropolis, or the cost of uprooting.* The Yale Environmentalist Spring 2023 (p. 66-67).
1. Giovanetti-Singh, G.\*, Kent, R.\*, **Manivannan, S.N.\*** October 2021. *Hidden Figures.* BlueSci Issue 52 (p.18-23).

\*contributed equally

## INVITED/CONTRIBUTED PRESENTATIONS

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### Contributed

1. **Manivannan, S.N.**, Ogbunugafor, C.B. *Measuring evolvability in fitness landscapes: What do mutations tell us about “evolvability potential”?* Graduate Student Symposium, Ecology & Evolutionary Biology, Yale University (Dec 2024)

### Invited

1. **Manivannan, S.N.**, Diaz Arenas, C., Grubaugh, N.D., Ogbunugafor, C.B. *Does epistasis belong in the canon of viral genomic epidemiology?* Bank and Li-Richter lab groups, Institute of Ecology and Evolution, Universität Bern (May 2024)

## TEACHING EXPERIENCE

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### Yale University

<b>McDougal Graduate Teaching Fellow</b> Poorvu Center for Teaching and Learning, Yale University	2024— <i>present</i>
<b>Teaching Fellow</b> <i>Evolution and Medicine (E&amp;EB 335)</i> , Yale University	2023
<b>Teaching Fellow</b> <i>Principles of Ecology and Evolutionary Biology (BIOL 104)</i> , Yale University	2023
<b>Teaching Fellow</b> <i>Biology of Terrestrial Arthropods (E&amp;EB250, E&amp;EB251L)</i> , Yale University	2022

### University of Cambridge

<b>Volunteer Teaching Assistant</b> <i>A Level Chemistry</i> Long Road Sixth Form College (STIMULUS Cambridge)	10/2019—03/2020
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## PROFESSIONAL DEVELOPMENT

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### SLiM Workshop

<i>American Natural History Museum and Ben Haller, Cornell University</i>	10/2024 New York City, NY, USA
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### Complexity Global School for Emerging Political Economics

<i>Santa Fe Institute and Universidad de los Andes</i>	07—08/2024 Bogotá, Colombia
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### Evolutionary Biology Graduate Student Workshop

<i>Department of Biology, University of Virginia</i>	07/2023 Mountain Lake Biological Station, VA, USA
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## MENTORSHIP

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### Undergraduate Research

Kemper Lowry (Yale Anthropology and E&EB'25)

### Women in Science at Yale (WISAY)

1 undergraduate, 2 Master's students

## LEADERSHIP & OUTREACH EXPERIENCE

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### University

#### International Committee Chair and Student Representative (E&EB)

Graduate Student Assembly, Yale University	05/2024— <i>present</i>
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#### Student Organiser, Hutchinson Speaker seminars

Department of Ecology and Evolutionary Biology, Yale University	06/2023—05/2024
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**Talk Coordinator for Science in the News**

Yale Science Communication (*A graduate student organisation*)

**International Students' Representative**

Women's Campaign, Cambridge Students' Union

10/2020—06/2021

**International Officer**

Homerton Union of Students

09/2019—06/2020

**Others**

**Tamil Translator**

Covid-19 Migrant Support Coalition (CMSC) in Singapore

07/2020—09/2021

**Contributing Writer**

Varsity (Features); The Cambridge Language Collective

04/2020—06/2021