Nicole Nova, PhD Candidate

Department of Biology, Stanford University
327 Campus Drive, Stanford, CA 94305
nicole.nova@stanford.edu | nicolenova.com

Interests: Ecology, evolution, complexity science, data science, statistics, mathematical biology, population genetics, evolutionary genomics, infectious disease, health, conservation.

Education

2016–2022	PhD	Biology, Stanford University
2018–2020	MS	Statistics, Stanford University
2007–2012	BSc, MSc	Dental Surgery, Karolinska Institutet

Employment & Research Experience

2019–2021 Stanford Data Science Scholar, Stanford Data Science Institute, Stanford University

2018–2022 PhD Candidate, Department of Biology, Stanford University
Advisors: Erin Mordecai and Dmitri Petrov

2016 Director, Research Science Institute, Massachusetts Institute of Technology (MIT) and Center for Excellence in Education (CEE)

2015–2016 Research Associate, Department of Biology, Duke University (PI: Katia Koelle)

2014–2015 Research Trainee, Department of Data Science, Dana-Farber/Harvard Cancer Center (PI: Franziska Michor)

2011–2012 Mentorship Director, Research Academy for Young Scientists

2011 Exchange Student, St. Bartholomew's and the Royal London School of Medicine and Dentistry, Queen Mary University of London

2010 Surgical Assistant, Department of Cranio-, Maxillofacial and Oral Surgery, Medical University of Vienna

2010–2012 Research Assistant, Department of Physiology and Pharmacology, Karolinska Institutet (PI: Camilla Svensson)

2008–2011 Co-founder, European Dental Students' Association (EDSA) Research Program, (summer research exchange internship for dental students in Europe)

2008 Exchange Student, National Youth Science Forum, Australian National University (international summer science camp)

2007 Research Intern, Department of Brain and Cognitive Sciences, Harvard Medical School, Brigham and Women's Hospital (PI: Jeremy Wolfe) via Research Science Institute (summer research program hosted by MIT)

2006 Research Intern, Department of Biosciences and Nutrition, Karolinska Institutet

Awards

2020 Murray F. Buell Award for Excellence in Ecology runner-up (honorable mention) for best student oral presentation, Ecological Society of America (ESA)

2020 Annabelle B. Bush Memorial Award, Philanthropic Educational Organization (PEO)

2020 PEO Scholar Award, International Chapter of the PEO Sisterhood ($15,000)
2017 Excellence in Teaching Award, Department of Biology, Stanford University
2007 Best Student of the Year Award (Valedictorian), Internationella Engelska Gymnasiet
2007 First prize, National Science Fair, Swedish Federation of Young Scientists

Funding

2020 Modeling of Infectious Disease Agent Study (MIDAS) Grant ($600)
2019 Stanford Data Science Scholarship (50% salary & tuition for two years)
2019 Stanford Disease Ecology, Health, and the Environment Travel Grant ($500)
2019 Stanford Biology EcoEvo Conference Travel Grant ($700)
2018 Environmental Venture Project Grant,
Stanford Woods Institute for the Environment ($50,000)
2018 The Bing Fellowship in Honor of Paul Ehrlich (salary & tuition for one year)
2017 Stanford Biology EcoEvo Conference Travel Grant ($600)
2015 Mathematical Biosciences Institute Travel Grant (all travel & workshop expenses)
2013 Google Women in Tech Conference and Travel Grant (1,000 €)
2011 European Union Erasmus Mundus Scholarship (1,000 €)
2010 Karolinska Institutet Summer Research Scholarship in Medical Sciences (9,000 SEK)
2008 Swedish Federation of Young Scientists Fellowship (all expenses paid)
to attend National Youth Science Forum at Australian National University
2007 Gålöstiftelsen Study Stipend (50,000 SEK for five years of university studies)
2007 Knut and Alice Wallenberg Fellowship (all expenses paid)
to attend Research Science Institute at Massachusetts Institute of Technology
2006 Karolinska Institutet Summer Research Scholarship in Biomedicine (5,000 SEK)

Publications

* denotes co-first authorship | `Google Scholar` | Citations: 110 | h-index: 4 | i10-index: 4

Peer-Reviewed Journal Articles

7. Hopkins SR, Sokolow SH, Buck JC, De Leo GA, Jones IJ, Kwong LH, LeBoa C, Lund AJ, MacDonald AJ, **Nova N**, Olson SH, Peel AJ, Wood CL, Lafferty KD. 2021. How to identify win–win interventions that benefit human health and conservation. *Nature Sustainability*. 4(4):298–304. `doi:10.1038/s41893-020-00640-z`

6. Athni TS, Shocket MS, Couper LI, **Nova N**, Caldwell IR, Caldwell JM, Childress JN, Childs ML, De Leo GA, Kirk DG, MacDonald AJ, Olivarius K, Pickel DG, Winokur OC, Young HS, Cheng J, Grant EA, Kurzner PM, Kyaw S, Lin BJ, Lopez RC, Massihpour DS, Olsen EC, Roache M, Ruiz A, Schultz EA, Shafat M, Spencer RL, Bharti N, Mordecai EA. 2021. The influence of vector-borne disease on human history: socio-ecological mechanisms. *Ecology Letters*. 24(4):829–846. `doi:10.1111/ele.13675`

5. **Nova N**, Deyle ER, Shocket MS, MacDonald AJ, Childs ML, Rypdal M, Sugihara G, Mordecai EA. 2021. Susceptible host availability modulates climate effects on dengue dynamics. *Ecology Letters*. 24(3):415–425. doi:10.1111/ele.13652

4. Allen WE*, Altae-Tran H*, Briggs J*, Jin X*, McGee G*, Shi A*, Raghavan R, Kamariza M, **Nova N**, Pereta A, Danford C, Kamel A, Gothe P, Milam E, Aurambault J, Primke T, Li W, Inkenbrandt J, Huynh T, Chen E, Lee C, Croatto M, Bentley H, Lu W, Murray R, Travassos M, Coull BA, Openshaw J, Greene CS, Shalem O, King G, Probasco R, Cheng DR, Silbermann B, Zhang F, Lin X. 2020. Population-scale longitudinal mapping of COVID-19 symptoms, behaviour and testing. *Nature Human Behaviour*. 4(9):972–982. doi:10.1038/s41562-020-00944-2

3. Smith JR, Hendershot JN, **Nova N**, Daily GC. 2020. The biogeography of ecoregions: Descriptive power across regions and taxa. *Journal of Biogeography*. 47(7):1413–1426. doi:10.1111/jbi.13871

2. Sokolow SH, **Nova N**, Pepin MK, Peel AJ, Pulliam JRC, Manlove K, Cross PC, Becker DJ, Plowright RK, McCallum H, De Leo GA. 2019. Ecological interventions to prevent and manage zoonotic pathogen spillover. *Philosophical Transactions of the Royal Society B*. 374(1782):20180342. doi:10.1098/rstb.2018.0342

1. Childs ML, **Nova N**, Colvin J, Mordecai EA. 2019. Mosquito and primate ecology predict human risk of yellow fever virus spillover in Brazil. *Philosophical Transactions of the Royal Society B*. 374(1782):20180335. doi:10.1098/rstb.2018.0335

Preprints

4. **Nova N**. Cross-species transmission of emerging coronaviruses in humans and domestic mammals. *Frontiers in Public Health – Planetary Health* (under review). Authorea preprint

3. Couper LI, Farner JE, Caldwell JM, Childs ML, Harris MJ, Kirk DG, **Nova N**, Shocket MS, Skinner EB, Uricchio LH, Exposito-Alonso M, Mordecai EA. How will mosquitoes adapt to climate change? *eLife* (in revision). Authorea preprint

2. Sokolow SH, Jones IJ, Wood CL, Lafferty KD, Garchitorena A, Hopkins SR, Lund AJ, MacDonald AJ, **Nova N**, Le Boa C, Peel AJ, Mordecai EA, Chamberlin A, Howard ME, Buck JC, Lopez-Carr D, Barry M, Bonds M, De Leo GA. More than one third of global human infectious disease burden is environmentally mediated, with disproportionate effects in rural poor areas. *The Lancet Planetary Health* (in revision). The Lancet preprint

1. Childs ML*, Kain MP*, Harris M*, Kirk D, Couper L, **Nova N**, Delwel I, Ritchie J, Becker AD, Mordecai EA. The impact of long-term non-pharmaceutical interventions on COVID-19 epidemic dynamics and control: the value and limitations of early models. *Proceedings of the Royal Society B* (in revision). medRxiv preprint

Book Chapters

2. Kirk DG, Skinner EB, Shocket MS, Couper LI, **Nova N**, Athni TS, Pourtois JD, Farner JE, Childs ML, Nyathi S, Mordecai EA. Climate Change and Disease Ecology. In: Suzán G, Aguirre AA, Mills JM, editors. The Ecology of Infectious Diseases: Methods on Evolution, Biodiversity, and Environmental Interactions.
Oxford University Press (under review).

1. Shocket MS, Anderson CB, Caldwell JM, Childs ML, Couper LI, Han S, Harris MJ, Howard ME, Kain MP, MacDonald AJ, **Nova N**, Mordecai EA. 2021. Environmental drivers of vector-borne diseases. In: Drake JM, Bonsall M, Strand M, editors. Population Biology of Vector-borne Diseases (Ecology and Evolution of Infectious Diseases Series). *Oxford University Press*. ISBN:9780198853244

Published Abstract

Van Wert M, **Nova N**, Horowitz T, Wolfe J. 2008. What does performance on one visual search task tell you about performance on another? *Journal of Vision*. 8(6):312. doi:10.1167/8.6.312

Thesis

Nova N, Alstergren P, Svensson C. 2012. Chronic inflammation and pain: Assessment of c-Fos and ATF-3 as markers of spinal neuronal activity in a pain model of rheumatoid arthritis. *M.Sc. Thesis, Karolinska Institutet*. PDF

Media Coverage

4. Isabella Backman. Stanford course explores how diseases have shaped human history. Stanford News. January 27, 2021.
news.stanford.edu/2021/01/27/diseases-history-intertwined

3. Vilina Mehta. Understanding COVID-19, zoonotic viruses. The Stanford Daily. April 27, 2020. www.stanforddaily.com/2020/04/27/understanding-covid-19-zoonotic-viruses

2. Hans Bergström. An IES alumnus at the forefront of virus research. IES News. April 21, 2020. engelska.se/news/en-ies-elev-vid-fronten-av-virusforskningen

1. Rob Jordan. Stanford-developed interactive model explores how different interventions affect COVID-19's spread. Stanford News. March 30, 2020.
news.stanford.edu/2020/03/30/modeling-social-distancings-impact

Oral Presentations

8. **Nova N**, Deyle ER, Shocket MS, MacDonald AJ, Childs ML, Rypdal M, Sugihara G, Mordecai EA. 2021. Susceptible host availability modulates climate effects on dengue dynamics. Bay Area Ecology and Evolution of Infectious Diseases (BAEEID), UC Davis, CA (held online due to COVID-19).

7. **Nova N**, Deyle ER, Shocket MS, MacDonald AJ, Childs ML, Rypdal M, Sugihara G, Mordecai EA. 2020. Empirical dynamic modeling reveals ecological drivers of dengue dynamics. Ecological Society of America (ESA) Annual Meeting, Salt Lake City, UT (held online due to COVID-19).

6. **Nova N**, Solari K, Beckmen K, Petrov D. 2020 (post-poned to 2021 due to COVID-19). Phylogenetics and genomic characteristics of canine distemper virus in Arctic foxes. Arctic Fox Conference, Norwegian Polar Institute, Longyearbyen, Svalbard.

5. **Nova N**, Deyle ER, Shocket MS, MacDonald AJ, Childs ML, Rypdal M, Sugihara G, Mordecai EA. 2020. Empirical dynamic modeling reveals ecological drivers of dengue dynamics. Ecology and Evolution of Infectious Disease Seminar, UC Berkeley, Berkeley, CA (held online due to COVID-19).

4. **Nova N**, Sokolow SH, Bowden SE, Han B, Pepin KM, Peel AJ, Manlove K, Cross PC, Becker D, Plowright RK, McCallum HI, De Leo GA, Mordecai EA. 2019. Predictors of pathogen sharing across taxa reveal ecological levers to prevent pathogen spillover from wildlife to humans. Ecological Society of America (ESA) Annual Meeting, Louisville, KY.

3. **Nova N**. 2018. Ecological and evolutionary drivers of infectious diseases. Centre for Mathematical Biology, University of South Bohemia, Czech Republic.

2. **Nova N**. 2015. Mathematical Modeling in the Biosciences. 30th Jubilee Symposium of Research Program in Biomedicine, Karolinska Institutet, Stockholm, Sweden.

1. **Nova N**. 2015. Mathematical Modeling of Cancer and Infectious Diseases. National Science Foundation Research Experiences for Undergraduates in Mathematical Biology (invited guest speaker), University of North Carolina at Greensboro, NC.

Poster Presentations

9. **Nova N**, Solari K, Beckmen K, Petrov D. 2020 (cancelled due to COVID-19). Genomic characteristics of canine distemper virus in Arctic wildlife. Annual Meeting of the Society for Molecular Biology and Evolution (SMBE), Québec City, Canada.

8. Childs ML, **Nova N**, Colvin J, Mordecai EA. 2019. Mosquito and primate ecology predict human risk of yellow fever virus spillover in Brazil. American Geophysical Union (AGU) Fall Meeting, San Francisco, CA.

7. Leempoel K, Meyer J, Hebert T, **Nova N**, Hadly EA. 2018. Return of an apex predator to a suburban preserve triggers a rapid trophic cascade. Conservation Asia, Society for Conservation Biology, American University of Central Asia, Bishkek, Kyrgyz Republic.

6. **Nova N**, Deyle ER, Shocket MS, MacDonald AJ, Childs ML, Rypdal M, Sugihara G, Mordecai EA. 2018. Empirical dynamic modeling reveals that temperature and rainfall drive dengue dynamics. Ecology and Evolution of Infectious Diseases, University of Glasgow, Glasgow, UK.

5. **Nova N**, Deyle ER, Shocket MS, MacDonald AJ, Childs ML, Rypdal M, Sugihara G, Mordecai EA. 2018. Environmental factors drive dengue incidence in Puerto Rico. Stanford Global Health Research Convening, Stanford University, Stanford, CA.

4. **Nova N**, Deyle ER, Shocket MS, MacDonald AJ, Childs ML, Rypdal M, Sugihara G, Mordecai EA. 2017. Environmental factors driving dengue incidence in Central and South America. Ecology and Evolution of Infectious Diseases, University of California Santa Barbara, CA.

3. **Nova N**, Koelle K. 2015. Modeling the development of neutralizing antibody breadth in chronic-stage HIV infection. Triangle Center for Evolutionary Medicine Symposium, The Solution Center in Research Triangle Park, Durham, NC.

2. **Nova N**, Bas D, Svensson K. 2010. Assessment of c-Fos as a marker of spinal neuronal activity in a pain model of rheumatoid arthritis. Annual Medical Sciences Symposium, Karolinska Institutet, Stockholm, Sweden.

1. **Nova N**, Robertson K. 2006. Activation of Liver X Receptor affects the function and differentiation of osteoclasts. Biomedical Sciences Symposium, Karolinska Institutet, Stockholm, Sweden.

Teaching

2021 Guest Lecturer, Stanford University
Globally Emerging Zoonotic Diseases (COMPMED 84Q)
2019 Teaching Assistant, Stanford University
Ecology and Evolution of Infectious Disease in a Changing World (BIO 2N)
2017 Teaching Assistant, Stanford University
Fundamentals of Molecular Evolution (BIO 113/244)
2017 Teaching Assistant, Stanford University
Introduction to Research in Ecology and Evolutionary Biology (BIO 47)

Services

2020 Research mentor, Research Science Institute (RSI),
Center for Excellence in Education (CEE). Mentee: Shreya Ramachandran.
2019 Research mentor, Biology Summer Undergraduate Research Program (B-SURP),
Stanford University, Stanford, CA. Mentees: Rachael Wang and Allen Huang.
2019 Co-Organizer, Planetary Health Annual Meeting, Planetary Health Alliance,
Stanford University, Stanford, CA.
2019 Co-Organizer, Organized Oral Session, Ecological Levers to Improve Human
Health, Ecological Society of America (ESA) Annual Meeting, Louisville, KY.
2016–2017 Chair, Biology Department Seminar Series Speaker Selection Student Committee,
Stanford University, Stanford, CA.
2008–2009 Co-organizer, National Science Fair, Swedish Federation of Young Scientists,
Stockholm, Sweden.

Workshops & Certificates

2020 Annual Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID), University of Washington, Seattle, WA (held online due to COVID-19).
2018 Genomics of Wildlife Diseases, Colorado State University, Fort Collins, CO.
2018 Wilderness First Aid Certificate, Wilderness Medicine Training Center, WA.
2015 Evolutionary Game Theory Workshop, Mathematical Biosciences Institute, Ohio State University, Columbus, OH.
2013 2.03x: Dynamics, MIT via edX. `Certificate`
2013 PHYS102x: Electricity & Magnetism, Rice University via edX. `Certificate`
2013 BIO465x: Neuronal Dynamics, EPFL via edX. `Certificate`
2013 EuroBSDcon 2013, St. Julian's, Malta.
2010 Maxillofacial International Student Training Course, Chiemsee-Akademie, Seebruck, Germany.

Computer Skills

Advanced R, Python, Matlab, C, C++, LaTeX
Intermediate Mathematica, HTML/CSS/JS
Basic Java, Django, Node.JS