Nicole Nova, Ph.D. Candidate

Department of Biology, Stanford University
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Interests: Ecology, evolution, statistics, data science, mathematical biology, infectious disease, population genetics, comparative genomics, public health, and conservation.

Education

2016–2021	Ph.D.	Biology, Stanford University
2018–2020	M.S.	Statistics, Stanford University
2007–2012	B.Sc., M.Sc.	Dental Surgery, Karolinska Institutet

Positions

2019–2021 Data Science Scholar, Data Science Institute, Stanford University
2018–2021 Ph.D. Candidate, Department of Biology, Stanford University
Advisors: Erin Mordecai and Dmitri Petrov
2016 Director, Research Science Institute, Center for Excellence in Education and Massachusetts Institute of Technology (MIT)
2015–2016 Research Associate, Department of Biology, Duke University (PI: Katia Koelle)
2014–2015 Research Trainee, Department of Biostatistics and Computational Biology, 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 P.E.O. Scholar Award, International Chapter of the P.E.O. 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

2019 Stanford Data Science Scholarship (25% RAship & 50% 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

Peer-Review

10. Athni TS, Shocket MS, Caldwell IR, Caldwell JM, Childress JN, Childs ML, Couper LI, De Leo GA, Kirk D, MacDonald AJ, **Nova N**, 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, Mordecai EA. How vector-borne disease shaped the course of human history. *Ecology Letters* (under review). `Authorea preprint`

9. 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. Population-scale Longitudinal Mapping of COVID-19 Symptoms, Behavior, and Testing Identifies Contributors to Continued Disease Spread in the United States. *Nature Medicine* (under review). `medRxiv preprint`

8. Childs ML, Kain MP, Kirk D, Harris M, Couper L, **Nova N**, Delwel I, Ritchie J, Mordecai EA. The impact of long-term non-pharmaceutical interventions on COVID-19 epidemic dynamics and control. *Nature Communications* (under review). `medRxiv preprint`

7. **Nova N**, Deyle ER, Shocket MS, MacDonald AJ, Childs ML, Rypdal M, Sugihara G, Mordecai EA. Empirical dynamic modeling reveals ecological drivers of dengue dynamics. *Submitted*. bioRxiv preprint

6. Leempoel K, Meyer J, Hebert T, **Nova N**, Hadly EA. Return of an apex predator to a suburban preserve triggers a rapid trophic cascade. *Journal of Animal Ecology* (under review). bioRxiv preprint

5. 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* (under review). preprint

4. Hopkins SR, Sokolow SH, De Leo GA, Buck JC, Jones I, Kwong L, LeBoa C, Lund A, MacDonald A, **Nova N**, Olson SH, Peel AJ, Wood CL, Lafferty KD. Identifying win–wins for human health and conservation. *Nature Sustainability* (under review).

3. Smith JR, Hendershot JN, **Nova N**, Daily GC. 2020. The biogeography of ecoregions: Descriptive power across regions and taxa. *Journal of Biogeography*. 2020;00:1–14. 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 levers 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

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

Book Chapter

Shocket MS, Anderson CB, Caldwell JM, Childs ML, Couper LI, Han S, Harris MJ, Howard ME, Kain MP, MacDonald AJ, **Nova N**, Mordecai EA. 2020. Environmental Drivers of Vector-Borne Diseases. In: Drake JM, editor. *Ecology and Evolution of Infectious Diseases: Population Biology of Vector-borne Diseases*. Oxford University Press (accepted, in press).

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.* `Publication`

Media Coverage

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

Invited Talks

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, Utah.

6. **Nova N**, Solari K, Beckmen K, Petrov D. 2020 (post-poned to 2021 due to the COVID-19 pandemic). 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 (moved to zoom due to the COVID-19 pandemic).

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, Ceske Budejovice, 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 (guest speaker), University of North Carolina at Greensboro, NC.

Poster Presentations

9. **Nova N**, Solari K, Beckmen K, Petrov D. 2020 (cancelled due to the COVID-19 pandemic). 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

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

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

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