

Curriculum Vitae

Daniel B. Larremore

Omidyar Fellow, Santa Fe Institute

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Contact Information

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Google Scholar: [here](#)
Github: [here](#)

Research Interests

- Network science (dynamics, structure, inference, applications)
- Recombinant genetics and evolution of the malaria parasite *P. falciparum*.
- Formation and evolution of hierarchy and inequality in the structures of academic science.
- Dynamics on excitable networks, particularly with applications to neuroscience.

Education

University of Colorado at Boulder, Department of Applied Mathematics May, 2012
Ph.D in Applied Mathematics. Advisor: Juan G. Restrepo
“Critical Dynamics in Complex Excitable Networks”

University of Colorado at Boulder, Department of Applied Mathematics December, 2009
M.S. in Applied Mathematics

Washington University in St. Louis, School of Engineering and Applied Science May, 2005
B.S. in Chemical Engineering, *cum laude*

Academic Positions

University of Colorado **Boulder, CO**
Assistant Professor, Computer Science Fall 2017
Assistant Professor, BioFrontiers Institute Fall 2017

Santa Fe Institute **Santa Fe, NM**
Omidyar Fellow 2015 - Present

Center for Communicable Disease Dynamics, Harvard School of Public Health **Boston, MA**
Postdoctoral Fellow with Caroline Buckee (HSPH) and Aaron Clauset (Colorado) 2012 - 2015

University of Colorado **Boulder, CO**
Research Assistant with advisor Juan G. Restrepo (Colorado) 2009 - 2012

University of Colorado **Boulder, CO**
Research Assistant and Mentor, MCTP Program - NSF DMS-060228 June 2010 - May 2011

Industry Experience

Gambro Blood Component Technologies

Research and Development Engineer
Engineering Intern II
Engineering Intern I

Lakewood, CO

2005 - 2007
Summer 2005
Summer 2004

Barry Z. Cynamon Consulting

Scientific and Technical Consultant

San Francisco, CA

2016 - present

Peer-Reviewed Publications

1. **D. B. Larremore***, L. Peel*, A. Clauset. “The ground truth about metadata and community detection in networks.” *Science Advances* **3**(5) e1602548 (2017).
2. C. De Bacco, E. A. Power, **D. B. Larremore**, C. Moore. “Community detection, link prediction, and layer interdependence in multilayer networks.” *Physical Review E* **95** 042317 (2017).
3. S. F. Way, **D. B. Larremore**, A. Clauset. “Gender, Productivity, and Prestige in Computer Science Faculty Hiring Networks.” *Proceedings of the 2016 World Wide Web Conference (WWW)* 1169-1179, (2016).
4. **D. B. Larremore**, S. A. Sundararaman, W. Liu, W. R. Proto, A. Clauset, D. E. Loy, S. Speede, L. J. Plenderleith, P. M. Sharp, B. H. Hahn, J. C. Rayner*, and C. O. Buckee*. “Ape origins of human malaria virulence genes.” *Nature Communications*, **6**, 8368 (2015).
5. A. Clauset, S. Arbesman, **D. B. Larremore**, “Systematic inequality and hierarchy in faculty hiring networks.” *Science Advances*, **1**, e1400005 (2015).
6. A. K. Bei, A. Diouf, K. Miura, **D. B. Larremore**, U. Ribacke, G. Tullo, E. L. Moss, D. E. Neafsey, R. F. Daniels, A. E. Zeituni, I. Nosamiefan, S. K. Volkman, A. D. Ahouidi, D. Ndiaye, T. Dieye, S. Mboup, C. O. Buckee, C. Long, and D. F. Wirth., “Immune characterization of *P. falciparum* parasites with a shared genetic signature in a region of decreasing transmission.” *Infection and Immunity*, **83**(1), 276 (2014).
7. **D. B. Larremore**, A. Clauset, and A. Z. Jacobs, “Efficiently inferring community structure in bipartite networks.” *Physical Review E*, **90**(1), 012805 (2014).
8. **D. B. Larremore**, W. L. Shew, E. Ott, F. Sorrentino, and J. G. Restrepo, “Inhibition causes ceaseless dynamics in networks of excitable nodes” *Physical Review Letters*, **112**, 138103 (2014).
9. **D. B. Larremore**, A. Clauset, and C. O. Buckee, “A network approach to analyzing highly recombinant malaria parasite genes.” *PLOS Computational Biology* **9**(10) e1003268 (2013).
10. **D. B. Larremore*** and D. Taylor*, “Social Climber attachment in forming networks produces phase transition in a measure of connectivity.” *Physical Review E* **86** 031140 (2012).
11. **D. B. Larremore**, M. Y. Carpenter, E. Ott, and J. G. Restrepo, “Statistical properties of avalanches in networks.” *Physical Review E* **85**, 066131 (2012).
12. **D. B. Larremore**, W. L. Shew, E. Ott, and J. G. Restrepo, “Effects of network topology, transmission delays, and refractoriness on the response of coupled excitable systems to a stochastic stimulus.” *Chaos* **21**, 025117 (2011).
13. **D. B. Larremore**, W. L. Shew, J. G. Restrepo, “Predicting criticality and dynamic range in complex networks: effects of topology.” *Physical Review Letters* **106**, 058101 (2011).

*equal contribution

† alphabetical author order

Submitted or In-Press Publications

1. S. F. Way, A. C. Morgan, A. Clauset, **D. B. Larremore**. “The misleading narrative of the canonical faculty productivity trajectory.” *Submitted* (2017). Available [here](#) via arXiv.org. Also accepted at ICWSM 2017, social science track (non-archival)]

2. † A. Berdahl*, C. Brelsford*, C. De Bacco*, M. Dumas*, V. Ferdinand*, J. A. Grochow*, L. Hébert-Dufresne*, Y. Kallus*, C. P. Kempes*, A. Kolchinsky*, **D. B. Larremore***, E. Libby*, E. A. Power*, C. A. Stern*, B. D. Tracey*. “Dynamics of beneficial epidemics.” *In Review* (2017). Available [here](#) via arXiv.org.
3. † Bailey K. Fosdick*, **D. B. Larremore***, Joel Nishimura*, Johan Ugander*. “Configuring random graph models with fixed degree sequences.” *In Press at SIAM Review* (2016). Available [here](#) via arXiv.org.
4. A. K. Bei, K. Miura, **D. B. Larremore**, A. Diouf, N. K. Baro, R. F. Daniels, A. Griggs, E. L. Moss, D. E. Neafsey, A. B. Deme, M. Sy, S. Schaffner, A. D. Ahouidi, D. Ndiaye, T. Dieye, S. Mboup, C. O. Buckee, S. K. Volkman, C. A. Long, D. F. Wirth, “Plasmodium falciparum population genetic complexity influences expression dynamics and immune recognition among highly related genotypic clusters.” *In Review* (2016).
5. † A. Berdahl*, U. Bhat*, V. Ferdinand*, J. Garland*, K. Ghazi-Zahedi*, J. Grana*, J. A. Grochow*, E. Hobson*, Y. Kallus*, C. P. Kempes*, A. Kolchinsky*, **D. B. Larremore***, E. Libby*, E. A. Power*, B. D. Tracey*. “On the records.” (2017) Available [here](#) via arXiv.org.

* equal contribution

† alphabetical author order

Perspectives, Essays, and Other Publications

1. **D. B. Larremore**, A. Clauset. “Why predicting the future is more than just horseplay.” *The Christian Science Monitor*, 24 April, 2017. [contributed essay][[link](#)]
2. A. Clauset, **D. B. Larremore**, R. Sinatra. “Data-driven predictions in the science of science.” *Science* **355**, 477-480 (2017). [invited perspective piece]
3. D. E. Geer Jr. and **D. B. Larremore**, “Progress is Infectious.” *IEEE Security & Privacy* **10**(6) p. 94-95 (2012). [monthly column of D. E. Geer Jr.]

Book Chapters

D. B. Larremore, W. L. Shew, J. G. Restrepo, “Critical Dynamics in Complex Networks” *Criticality in Neural Systems*. Ed. Dietmar Plenz & Ernst Niebur. NY: Wiley, 365-392, 2014.

Funding

“Academic hiring networks and scientific productivity across disciplines.” 2016-2019
PI, with Mirta Galesic (co-PI; Santa Fe Institute) and Aaron Clauset (PI; Colorado)
 NSF SBE, \$550,000

“Models of Infections Disease Agents Study Center for Communicable Disease Dynamics”
Consultant, with Marc Lipsitch (PI; Harvard School of Public Health).
 NIH NIGMS, \$11,279,771 2015-2019

“Network Assortativity” collaboration grant
Proposer, with Bailey Fosdick (Colorado State), Joel Nishimura (Arizona State), and
 Johan Ugander (Microsoft Research)
 Amer. Mathematical Soc. (AMS) Mathematical Research Communities, \$2,250 2014

Software

- **webweb**, a free set of MATLAB, d3, and javascript code allowing for interactive visualization of complex networks a web browser. danlarremore.com/webweb.
- **PercoVIS**, a free tool for visualizing percolation on networks. danlarremore.com/PercoVIS.html. Cited in: Daniel E. Geer’s “Power. Law.” *IEEE Security and Privacy*, **10**(1), 94 (2012) - “a lovely visualization tool.” Franco Landriscina, *Simulation and Learning*, Springer (2013).

Invited Talks

- “Gender, prestige, and productivity in academic hiring networks and career trajectories.”
Seminar, Berkeley Institute for Data Science, *UC Berkeley*, Berkeley, CA March 17, 2017
- “The assembly of prestige and status in networks.”
Influence, Complexity and Networks, *Dialog Group*, Austin, TX Feb 23, 2017
- “The ground truth about metadata and community detection in networks.”
Networks Seminar, *University of Houston*, Houston, TX Oct 28, 2016
- “Gender, prestige, and productivity in faculty hiring networks.”
Quantifying Success Satellite Symposium, *NetSci 2016*, Seoul, Korea June 1, 2016
- “Networks and the evolution of malaria's virulence in humans and apes.”
Network Frontiers Workshop, *Northwestern Univ. Inst. of Complex Systems*, Evanston, IL Dec 7, 2015
- “Networks in two acts: faculty hiring hierarchies and malaria's evolving virulence.”
Arts & Sciences Seminar, *Clarkson University*, Potsdam, NY Nov 13, 2015
- “Networks and the evolution of malaria's virulence in humans and apes.”
Mathematics Colloquium, *Clarkson University*, Potsdam, NY Nov 12, 2015
- “Networks, inference, and the evolution of malaria's virulence in humans and apes.”
Mechanical Engr. Seminar, *University of New Mexico*, Albuquerque, NM Nov 6, 2015
- “A complex networks approach to malaria's genetic recombination dynamics.”
Minisymposium, *SIAM Conf. on Applications of Dynamical Systems (DS15)*, Snowbird, UT May 15, 2015
- “Using networks to analyze rapid genetic recombination in malaria parasites.”
Dynamics & Complex Systems Seminar, *Applied Math, University of Colorado at Boulder* April 9, 2015
- “Using complex networks to understand rapid genetic recombination in wily malaria parasites.”
Invited Talk, *Santa Fe Institute* January 29, 2015
- “Complex networks, rapid genetic recombination, and tricky malaria antigens.”
Mathematics Colloquium, *Western New England University* November 7, 2014
- “Ceaseless critical dynamics in excitable networks with inhibitory nodes.”
Information, Self-Organizing Dynamics, and Synchronization on Complex Networks,
(ISODS) Satellite Symposium, *NetSci 2014*, Berkeley, CA June 3, 2014
- “Efficiently inferring community structure in bipartite networks.”
Seminar at Network Science and Graph Algorithms Program, *ICERM, Brown University* March 4, 2014
- “Critical dynamics in balanced excitable networks: neuronal avalanches, dynamic range, and ceaseless activity.”
Dynamics & Complex Systems Seminar, *Applied Math, University of Colorado at Boulder* February 28, 2013
- “Critical dynamics in balanced excitable networks: neuronal avalanches, dynamic range, and ceaseless activity.”
Seminar, *Center for Complex Network Research, Northeastern University* February 5, 2013
- “Predicting criticality and dynamic range in complex networks: effects of topology.”
Minisymposium, *SIAM Conf. on Applications of Dynamical Systems (DS11)*, Snowbird, UT May 23, 2011

Other Talks and Presentations

- Santa Fe Science Writers' Workshop, Santa Fe Institute, *Santa Fe, NM*. May 02, 2017
- Outside In seminar, Santa Fe Institute, *Santa Fe, NM*. October 19, 2016
- Conference on Complex Systems (CCS), *Amsterdam, NL* September 22, 2016
- SIAM Network Science (SIAM NS16), *Boston, MA* July 15, 2016
- Int'l Conf. on Computational Social Science (IC2S2), *Northwestern University* June 24, 2016
- NetSci, *Seoul, Korea* June 2, 2016
- Los Alamos Rotary Club, *Los Alamos, NM* March 15, 2016
- NetSci, *Zaragoza, Spain* June 3, 2015
- Freeman Symposium, *Harvard T. H. Chan School of Public Health* April 10, 2015
- Boston Area Parasitology Symposium (BAPS), *Boston, MA* December 8, 2014
- Defeating Malaria: from genes to the globe – poster *Harvard School of Public Health* December 2, 2014

- ASTMH – poster, *New Orleans, LA* November 4, 2014
- Harvard Channing Network Science Seminar, *Boston, MA* October 31, 2014
- NetSci – poster, *Berkeley, CA* June 4, 2014
- BioMalPar/EVIMalar, *EMBL, Heidelberg, Germany* May 13, 2014
- Network Frontiers Workshop, *NICO, Northwestern University* December 6, 2013
- ASTMH – poster, *Washington D.C.* November 15, 2013
- Oxford Tropical Network, *KEMRI, Kilifi, Oxford-Wellcome Trust, Kenya* October 1, 2013
- Networks Journal Club, *OCLAM, Oxford University, UK* March 8, 2013
- Dynamics Days – poster, *University of Colorado at Boulder* January 3, 2013
- Freeman Symposium, *Harvard School of Public Health* December 14, 2012
- Ph.D. Dissertation Defense, *University of Colorado at Boulder* April 5, 2012
- Front Range Applied Mathematics Student Conference, *Univ. of Colorado at Denver* March 3, 2012
- Dynamics Days – poster, *University of Maryland* January 3, 2012
- Comprehensive Examination, *University of Colorado at Boulder* September 27, 2011
- Front Range Applied Mathematics Student Conference, *Univ. of Colorado at Denver* March 5, 2011
- Dynamics Days 2011, *Duke University* January 6, 2011
- Complex and Dynamical Systems Seminar, *University of Colorado at Boulder* October 20, 2010
- Nonlinear Dynamics of Networks (NTD10) – poster, *University of Maryland* April 4, 2010
- Complex and Dynamical Systems Seminar, *University of Colorado at Boulder* April 1, 2010
- Front Range Applied Mathematics Student Conference, *Univ. of Colorado at Denver* March 6, 2010
- Dynamics Days 2010 – poster, *Northwestern University* January 3, 2010

Awards, Recognition, Affiliations

- Network Science Society – Member 2014 - present
- American Mathematical Society – Member 2014 - present
- American Society of Tropical Medicine and Hygiene – Member 2013 - present
- National Postdoctoral Association – Member 2012 - present
- Society of Industrial and Applied Mathematics – Member 2008 - present
- NetSci 2014 – Best Poster June, 2014
- “Inhibition causes ceaseless...” – *Physical Review Letters* Editors’ Suggestion April, 2014
- Arts and Sciences Dean’s Teaching Assistant Fellowship Spring, 2010
- Dynamics Days 2010 – Best Poster January, 2010
- Lead Teaching Assistant, Dept. of Applied Mathematics 2009 - 2010

Advising

- **William McKinnon, High School Student**, Santa Fe Institute July & August, 2016
Three week project to introduce 11th grade student to scientific research, coding, and communication.
Frequencies and periods: how punctuation rates change over time.
- **Kat Wicks, High School Student**, Santa Fe Institute 2015 - 2016
One year project to introduce 11-12th grade student to scientific research, coding, and communication.
- **Marshall Y. Carpenter, M.S.**, University of Colorado at Boulder 2012
Co-advised with Juan G. Restrepo under NSF MCTP.

Teaching

- Harvard School of Public Health** **Boston, MA, USA**
 - *Lecturer – CB399 Introduction to Modeling Infectious Disease* (networks) July 24 & 27, 2014
- Kenya Medical Research Institute (KEMRI)** **Kilifi, Kenya**
 - *Lecturer – TDMoNet Modeling Workshop* (networks in genetics & epidemiology) October 3, 2013
- University of Colorado** **Boulder, CO, USA**
 - *Guest Lecturer – CSCI5352* (Network Analysis and Modeling) October 9, 2014

- *Guest Lecturer* – PHYS7810/CHEM6711/MCDB6400 (Foundations of Quant. Bio.) November 5-7, 2013
- *Instructor of Record* – APPM 2350, Calculus III (Multivariable Calculus) Spring 2012
- *Instructor of Record* – APPM 2350, Calculus III (Multivariable Calculus) Fall 2011
- *Lead Teaching Asst.* – Applied Mathematics 2009 - 2010
- *Teaching Asst.* – APPM 1360, Calculus II Fall 2009
- *Teaching Asst.* – APPM 2360, Ordinary Differential Equations Spring 2009
- *Teaching Asst.* – APPM 2350, Calculus III (Multivariable Calculus) Fall 2008
- *Teaching Asst.* – APPM 2350, Calculus III (Multivariable Calculus) Summer 2008
- *Teaching Asst.* – APPM 2360, Ordinary Differential Equations Spring 2008
- *Teaching Asst.* – APPM 2350, Calculus III (Multivariable Calculus) Fall 2007

Referee Work

Grant Review

- National Science Foundation - SciSIP

Journals

- Europhysics Letters (EPL)
- IEEE Security and Privacy
- Journal of Statistical Mechanics: theory and experiment (JSTAT)
- Journal of the Association for Information Science and Technology (JASIST)
- Malaria Journal
- Methods in Ecology and Evolution
- Nature Scientific Reports
- Physical Review Letters (PRL)
- Physical Review X (PRX)
- Physical Review E (PRE)
- Physica A
- PLoS Biology
- PLoS Computational Biology
- PLoS Neglected Tropical Diseases
- PLoS ONE

Conferences

- Program Committee, 3rd Int'l Conf. on Computational Social Science (IC2S2 2017)
- Program Committee, NetSci 2017
- Program Committee, 26th Int'l World Wide Web Conf. (WWW17)
- Program Committee, SIAM Network Science 2016, 2017 (NS16, NS17)
- Program Committee, 9th Int'l Conf. on Web Search and Data Mining (WSDM 2016)
- Subreviewer, AAAI Conference on Artificial Learning (AAAI 2014)

University and Professional Service

Conferences, Workshops, Speaker Series (Organizer or co-organizer)

- *Statistical Inference for Network Models* June 19, 2017
Indianapolis, Indiana, Satellite Symposium of NetSci 2017.
Organized with Tamara Broderick, Bailey Fosdick, and Aaron Clauset.
- *Slice of Science* April, 2016 -
Santa Fe, NM. Ongoing Santa Fe Institute talk series.
Organizer
- *Statistical Inference for Network Models* May 31, 2016
Seoul, Korea, Satellite Symposium of NetSci 2016.
Organized with Bailey Fosdick, Abigail Z. Jacobs, and Aaron Clauset.

- *Statistical Inference for Network Models* June 1, 2015
Zaragoza, Spain, Satellite Symposium of NetSci 2015.
Organized with Leto Peel, Abigail Z. Jacobs, and Aaron Clauset.
- *Applied Network Science at Longwood Seminar Series, at Harvard School of Public Health.* 2014 - 2015
Boston, MA, monthly seminar for network research with biological, public health, or medical application.
Conceived and organized with John Platis.
- *Statistical Inference for Network Models* June 2, 2014
Berkeley, CA, Satellite Symposium of NetSci 2014
Organized with Leto Peel, Abigail Z. Jacobs, and Aaron Clauset.
- *Harvard School of Public Health Infectious Disease Epidemiology Seminar Series* 2014
Boston, MA
Organized with William Hanage.
- *Mathematics Research Community Workshop on Network Science* June 24-30, 2014
Snowbird, UT
Assisting Aaron Clauset, Mason Porter, & David Kempe.
- *TDMoNet Modeling Workshop (networks in genetics & epidemiology)* Oct 3, 2013
Kenya Medical Research Institute (KEMRI), Kilifi, Kenya.
Organized with Caroline O. Buckee
- *Front Range Applied Mathematics Student Conference* March 14, 2009
University of Colorado at Denver.
Organized with Daniel N. Kaslovsky, Anne Dougherty, *et al.*
- *SLAM Graduate Student Chapter Speaker Series* Spring 2009
University of Colorado at Boulder.
Co-organized with Daniel N. Kaslovsky.

Institutional Committees

- Complex Systems Summer School Applicant Review, *Santa Fe Institute* 2016, 2017
- Omidyar Fellowship Applicant Review & Selection Committee, *Santa Fe Institute* 2015, 2016
- Office of Discrimination and Harassment Review Committee, *Univ. Colorado Boulder* 2010 - 2012
- SIAM Graduate Student Chapter, *University of Colorado at Boulder* 2008 - 2010

Outreach

- “What it is to be a Scientist” May 4, 2016
Santa Fe Institute
Keynote, SFI High School Prize for Scientific Excellence

Other Service & Outreach

March for Science - Santa Fe

Lead Organizer

- Live radio appearance - Honey Harris - KBAC 98.1 Santa Fe, NM April 22, 2017
- Live radio appearance - Ira Gordon - KBAC 98.1 Santa Fe, NM March 21, 2017
- Live radio appearance - Ira Gordon - KBAC 98.1 Santa Fe, NM March 24, 2017
- Recorded radio appearance - Gillian Sutton - KRSN 107.1/1490 Los Alamos, NM April 18, 2017
- Live radio appearance - Rita Daniels - KNCE 93.5 Taos, NM April 19, 2017
- Live radio appearance - Richard Eeds - KVSF 101.5 Santa Fe, NM April 19, 2017
- Live Radio appearance - Honey Harris - KBAC 98.1 Santa Fe, NM April 20, 2017
- Recorded radio appearance - KSFR 101.1 public radio, Santa Fe, NM April 24, 2017

New Mexico Corrections / Penitentiary of New Mexico

Volunteer math teacher and tutor

Santa Fe, NM
January 2016 - present

Santa Fe Alliance for Science

Santa Fe, NM

Science fair judge

2015 - present

Greater University Service Foundation, Inc.

St. Louis, MO

Director

2008 - present

Co-founder and Secretary

2006 - 2008

The Boulder County AIDS Project

Boulder, CO

Volunteer math tutor; grocery packing and delivery.

2005 - 2011