Curriculum Vitae

Daniel B. Larremore

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Contact Information

BioFrontiers Institute
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Google Scholar: here
Github: @DBLarremore

Education

University of Colorado Boulder, Department of Applied Mathematics — 2012
Ph.D in Applied Mathematics. Advisor: Juan G. Restrepo
"Critical Dynamics in Complex Excitable Networks"

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

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

Academic Positions

University of Colorado — **Boulder, CO**
Assistant Professor, BioFrontiers Institute — 2017 - Present
Assistant Professor, Computer Science — 2017 - Present
Affiliate Faculty, Applied Mathematics — 2020 - Present

Harvard T.H. Chan School of Public Health — **Boston, MA**
External Faculty, Center for Communicable Disease Dynamics — 2020 - Present

Santa Fe Institute — **Santa Fe, NM**
Omidyar Fellow — 2015 - 2017

Harvard School of Public Health, Center for Communicable Disease Dynamics — **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
Research Assistant and Mentor, MCTP Program - NSF DMS-060228 — June 2010 - May 2011

Industry Experience

Gambro Blood Component Technologies — **Lakewood, CO**
Research and Development Engineer — 2005 - 2007
Engineering Intern II — Summer 2005
Engineering Intern I — Summer 2004

Peer-Reviewed Publications

* equal contribution
† alphabetical author order
★advised student coauthor

Peer-Reviewed Journal Articles

1. ★ E. Lee, A. Clauset, **D. B. Larremore.** "The Dynamics of Faculty Hiring Networks. " *In Press at EPJ Data Science* (2021)
2. K. K. Bjorkman, T. K. Saldi, E. Lasda, L. C. Bauer, J. Kovarik, P. K. Gonzales, M. R. Fink, K. L. Tat, C. R. Hager, J. C. Davis, C. D. Ozeroff, G. R. Brisson, **D. B. Larremore**, L. A. Leinwand, M. B. McQueen, R. Parker. "Higher viral load drives infrequent SARS-CoV-2 transmission between asymptomatic residence hall roommates." *Journal of Infectious Diseases,* jiab386, (2021).
3. E. Hobson, M. Silk, N. Fefferman, **D. B. Larremore**, P. Rombach, S. Shai, N. Pinter-Wollman. "A guide to choosing and implementing reference models for social network analysis." *Biological Reviews,* (2021)
4. **D. B. Larremore**, D. Toomre, R. Parker. "Modeling the effectiveness of olfactory testing to limit SARS-CoV-2 transmission." *Nature Communications*, 12, 3664 (2021).
5. M. I. Nisar, N. Ansari, F. Khalid, M. Amin, H. Shahbaz, A. Hotwani, N. Rehman, S. Pugh, U. Mehmood, A. Rizvi, A. Memon, Z. Ahmed, A. Ahmed, J. Iqbal, A. F. Saleem, U. B. Aamir, **D. B. Larremore,** B. K. Fosdick, F. Jehan. "Serial population-based serosurvey for COVID-19 in two neighborhoods of Karachi, Pakistan." *International Journal of Infectious Diseases* (2021).
6. **D. B. Larremore**, B. K. Fosdick, ★ K. M. Bubar, S. Zhang, S. M. Kissler, C. J. E. Metcalf, C. O. Buckee, Y. H. Grad. "Estimating SARS-CoV-2 seroprevalence and epidemiological parameters with uncertainty from serological surveys." *eLife* 10:e64206 (2021).
7. M. Kawakatsu*, P. S. Chodrow*, N. Eikmeier*, **D. B. Larremore**. "Emergence of hierarchy in networked endorsement dynamics." *Proceedings of the National Academy of Sciences, USA* 118 (16) e2015188118 (2021).
8. A. C. Morgan, S. F. Way, ★ M. J. D. Hoefer, **D. B. Larremor**e, M. Galesic, A. Clauset. "The unequal impact of parenthood in academia." *Science Advances,* 7 (9), eabd1996 (2021).
9. ★ K. M. Bubar, S. M. Kissler, M. Lipsitch, S. Cobey, Y. H. Grad, **D. B. Larremore**. "Model-informed COVID-19 vaccine prioritization strategies by age and serostatus" *Science,* 371 (6532), 916-921 (2021).
10. K. R. Sabourin, J. Schultz, J. Romero, M. M. Lamb, **D. B. Larremore**, T. E. Morrison, A. Frazer-Abel, S. Zimmer, R. M. Kedl, T. Jaenisch, R. Rochford. "Risk Factors of SARS-CoV-2 Antibodies in Arapahoe County First Responders - the COVID-19 Arapahoe SErosurveillance Study (CASES) Project" *Journal of Occupational and Environmental Medicine* 63 (3), 191-198 (2021).
11. **D. B. Larremore**, B. Wilder, E. Lester, S. Shehata, J. M. Burke, J. A. Hay, M. Tambe, M. J. Mina, R. Parker. "Test sensitivity is secondary to frequency and turnaround time for COVID-19 screening." *Science Advances,* eabd5393 (2020).
12. K. Finlinson, W. L. Shew, **D. B. Larremore**, J. G. Restrepo. Control of excitable systems is optimal near criticality. *Physical Review Research* 2, 033450 (2020).
13. A. Patania, B. McShane, B. Falk, **D. B. Larremore**, E. McDonnell Feit, E. Bruch, F. Feinberg, J. Helveston, M. Small, M. Braun, N. Fefferman. "Choices In Networks: A Research Framework." *Marketing Letters* (2020).
14. ★ T.-C. Yen, **D. B. Larremore**. Community Detection in Bipartite Networks with Stochastic Blockmodels. *Physical Review E,* 102, 032309 (2020).
15. S. M. Kissler*, N. Kishore*, M. Prabhu*, D. Goffman*, Y. Beilin*, R. Landau, C. Gyamfi-Bannerman, B. T. Bateman, D. Katz, J. Gal, A. Bianco, J. Stone, **D. B. Larremore**, C. O. Buckee, Y. H. Grad. "Reductions in commuting mobility predict geographic differences in SARS-CoV-2 prevalence in New York City." *Nature Communications,* 11, 4674 (2020).
16. **D. B. Larremore**, ★ K. M. Bubar, Y. H. Grad. "Implications of test characteristics and population seroprevalence on 'immune passport' strategies." *Clinical Infectious Diseases*, ciaa1019, (2020).
17. N. Obeng-Adjei*, **D. B. Larremore***, L. Turner, A. Ongoiba, S. Li, S. Doumbo, T. B. Yazew, O. K. Doumbo, K. Kayentao, L. H. Miller, B. Traore, S. K. Pierce, C. O. Buckee, T. Lavstsen, P. D. Crompton, T. M. Tran,

"Longitudinal analysis of naturally acquired antibodies to PfEMP1 CIDR domain variants and their association with malaria protection." *JCI Insight*, 5(12) e137262 (2020).

18. † 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." *Nature Scientific Reports* 9 (15093), (2019). [link]
19. ★ K. H. Wapman, **D. B. Larremore**. "webweb: a tool for creating, displaying, and sharing interactive network visualizations on the web." *Journal of Open Source Software* 4(40), 1458 (2019).
20. S. F. Way, A. C. Morgan, **D. B. Larremore***, A. Clauset*, "Productivity, prominence, and the effects of academic environment." *Proceedings of the National Academy of Sciences, USA* 116(18) (2019).
21. **D. B. Larremore**. "Bayes-optimal estimation of overlap between populations of fixed size." *PLOS Computational Biology* 15(3): e1006898. (2019).
22. V. Agrawal, A. B. Cowley, W. L. Shew, **D. B. Larremore**, J. G. Restrepo, Q. Alfaori. "Robust information capacity requires strong and balanced excitatory and inhibitory synapses." *Chaos **28*** 103115 (2018). [link]
23. C. De Bacco*, **D. B. Larremore***, C. Moore. "A physical model for efficient ranking in networks." *Science Advances **4***(7) eaar8260 (2018). [link]
24. † Bailey K. Fosdick*, **D. B. Larremore***, Joel Nishimura*, Johan Ugander*. "Configuring random graph models with fixed degree sequences." *SIAM Review, **60*** (2) 315-355. (2018). [link]
25. S. F. Way, A. C. Morgan, A. Clauset*, **D. B. Larremore***. "The misleading narrative of the canonical faculty productivity trajectory." *Proceedings of the National Academy of Sciences, USA **114*** (44) E9216-E9223 (2017). [link] [Also accepted at *ICWSM 2017*, social science track (non-archival).]
26. L. Peel*, **D. B. Larremore***, A. Clauset. "The ground truth about metadata and community detection in networks." *Science Advances* **3**(5) e1602548 (2017).
27. 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).
28. **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 parasite origins of human malaria virulence genes." *Nature Communications*, **6**, 8368 (2015).
29. A. Clauset, S. Arbesman, **D. B. Larremore**, "Systematic inequality and hierarchy in faculty hiring networks." *Science Advances,* **1**, e1400005 (2015).
30. 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).
31. **D. B. Larremore,** A. Clauset, and A. Z. Jacobs, "Efficiently inferring community structure in bipartite networks." *Physical Review E,* **90**(1), 012805 (2014).
32. **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).
33. **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).
34. **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).
35. **D. B. Larremore**, M. Y. Carpenter, E. Ott, and J. G. Restrepo, "Statistical properties of avalanches in networks." *Physical Review E* **85**, 066131 (2012).
36. **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).
37. **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).

Peer-Reviewed Conference Proceedings

38. 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). 11 pages, 16% acceptance rate.

Peer-Reviewed Workshop Papers

39. R. M. Layer, B. K. Fosdick, M. Bradshaw, **D. B. Larremore**, P. Doherty. "Case Study: Using Facebook Data to Monitor Adherence to Stay-at-home Orders in Colorado and Utah." *ACM SIGKDD Conference on Knowledge Discovery and Data Mining, Workshop on Humanitarian Data Mapping,* (2020).

Peer-Reviewed Book Chapters

40. L. M. Childs, **D. B. Larremore**, "Network models for malaria: antigens, dynamics, and evolution over space and time." *Systems Medicine: Integrative Qualitative and Computational Approaches.* Elsevier (2020).
41. **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).

Peer-Reviewed Perspectives and Essays

42. S. Cobey, **D. B. Larremore**, Y. H. Grad, M. Lipsitch. "Concerns about SARS-CoV-2 evolution should not hold back efforts to expand vaccination." *Nature Reviews Immunology* (2021).
43. M. J. Mina, R. Parker, **D. B. Larremore**. "Rethinking Covid-19 Test Sensitivity — A Strategy for Containment." *The New England Journal of Medicine* (2020).
44. A. Clauset, **D. B. Larremore**, R. Sinatra. "Data-driven predictions in the science of science." *Science* **355**, 477-480 (2017).

Journal Articles Currently Under Review

45. A. K. Bei, **D. B. Larremore**, K. Miura, 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." *Submitted* (2021).
46. **D. B. Larremore**,* K. Joseph*, A. Hannak*, A. Cimpian*, "Explaining Gender Differences in Academics' Career Trajectories." *Submitted* (2021).
47. S. Ruybal-Pesántez, F. E. Sáenz, S. Deed, ★ E. K. Johnson, **D. B. Larremore**, C. A. Vera-Arias, K. E. Tiedje, K. P. Day. "Evolution of Plasmodium falciparum var repertoires by sexual recombination sustains disease transmission after an outbreak in Ecuador" *Submitted* (2021).
48. T. S. Brown, P. Martinez de Salazar Munoz, A. Bhatia, B. Bunda, E. K. Williams, D. Bor, J. S. Miller, A. Mohareb, V. Naranbai, W. Garcia Beltran, T. E. Miller, J. Thierauf, W. Yang, D. Kress, K. Stelljes, K. Johnson, **D. B. Larremore**, J. Lennerz, A. J. Iafrate, S. Balsari, C. O. Buckee, Y. H. Grad. "GPS-estimated foot traffic data and venue selection for COVID-19 serosurveillance studies." *Submitted* (2021).
49. A. Morgan, A. Clauset, D. B. Larremore, ★ N. LaBerge, M. Galesic. "Socioeconomic Roots of Academic Faculty." *Submitted*, (2021).
50. C. A. Lopez, C. H. Cunningham, S. Pugh, K. Brandt, U. P. Vanna, M. J. Delacruz, Q. Guerra, S. J. Goldstein, Y. J. Hou, M. Gearhart, C. Wiethorn, C. Pope, C. Amditis, K. Pruitt, C. Newberry-Dillon, J. Schmitz, L. Premkumar, A. A. Adimora, M. Emch, R. Boyce, A. E. Aiello, B. K. Fosdick, **D. B. Larremore**, A. M. de Silva, J. J. Juliano, A. J. Markmann. "Disparities in SARS-CoV-2 seroprevalence among individuals presenting for care in central North Carolina over a six-month period." *Submitted* (2021).
51. ★ E. K. Johnson, R. Kahn, Y. H. Grad, M. Lipsitch, **D. B. Larremore**. "Test negative designs with uncertainty, sensitivity, and specificity." *Submitted* (2021).
52. ★ E. K. Johnson, **D. B. Larremore**. "Bayesian estimation of population size and overlap from random subsamples." *Submitted* (2021).

53. ★ K. M. Bubar*, ★ C. E. Middleton*, K. K. Bjorkman, R. Parker, **D. B. Larremore**. "SARS-CoV-2 Transmission and Impacts of Unvaccinated-Only Testing in Populations of Mixed Vaccination Status." *Submitted* (2021).
54. ★ N. LaBerge, ★ K. H. Wapman, A. C. Morgan, ★ S. Zhang, D. B. Larremore, Aaron Clauset. "Subfield Prestige and Gender Inequality in Computing" *Submitted* (2021).

Other Publications

55. D. E. Geer Jr. and **D. B. Larremore**, "Progress is Infectious." *IEEE Security & Privacy* **10**(6) p. 94-95 (2012).
56. † 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 via arxiv.org.

Funding

"Model-informed vaccine prioritization strategies" 2020-2021
PI
3U24GM132013-02S2, Models of Infectious Disease Agent Study (MIDAS)
National Institute of General Medical Science, National Institutes of Health
MIDAS Coordination Center (MIDASNI2020-2)
$100,000

"Causal, Statistical and Mathematical Modeling with Serologic Data" 2020-2022
Co-PI (via Subcontract to University of Colorado Boulder)
U01CA261277, National Cancer Institute, Nation Institutes of Health
$179,565 (to University of Colorado Boulder)
With PIs Marc Lipsitch and Michael Mina (Harvard T. H. Chan School of Public Health)

"Mapping the Structure and Dynamics of the Scientific Ecosystem." 2019-2022
PI
19RT0301. Air Force Office of Scientific Research, Minerva
$2,568,889
With Co-I Aaron Clauset (University of Colorado Boulder), Co-I Mirta Galesic (Santa Fe Institute), and Co-I Jennifer Dunne (Santa Fe Institute)

"Academic hiring networks and scientific productivity across disciplines." 2016-2020
PI
SMA 1633747. National Science Foundation, Social, Behavioral and Economic Sciences
$550,000.
With Co-PI Mirta Galesic (Santa Fe Institute) and PI Aaron Clauset (University of Colorado Boulder)
and with additional supplements awarded to PI Larremore:
REU Supplement, 2018, $5000
REU Supplement, 2019, $6000

"Models of Infections Disease Agents Study Center for Communicable Disease Dynamics" 2015-2019
Consultant
U54 GM088558. National Institutes of Health, National Institute of General Medical Sciences,
$11,279,771
With PI Marc Lipsitch (Harvard T.H. Chan School of Public Health).

"Network Assortativity" collaboration grant 2014
Proposer
American Mathematical Society Mathematical Research Communities

$2,250
With co-proposers Bailey Fosdick (Colorado State University), Joel Nishimura (Arizona State University), and Johan Ugander (Microsoft Research)

Invited Talks

- "Optimal control of excitable systems near criticality"
Physical Review Journal Club — December 7, 2021
- "Mathematical Models for Disease Mitigation via Testing"
Mathematical Biology and Applied Dynamics Seminar, Ohio State University — October 28, 2021
- "Vaccination Strategies Prioritization, Dose Sparing, and Decision Making Under Uncertainty & Inequity"
Society for Mathematical Biology, COVID-19 Vaccination Minisymposium — June 16, 2021
- "Modeling COVID-19 Testing Strategies: Mitigation vs Information"
Laboratory Medicine Research Conference, Yale School of Medicine — June 2, 2021
- "Vaccination Strategies Prioritization, Dose Sparing, and Decision Making Under Uncertainty & Inequity"
Computing Advisory Board, Dept. of Computer Science, Univ. Colorado Boulder — April 15, 2021
- "Vaccination Strategies Prioritization, Dose Sparing, and Decision Making Under Uncertainty & Inequity"
Colloquium, Santa Fe Institute — March 17, 2021
- "Model-informed COVID-19 vaccine prioritization and dose-sparing strategies by age and serostatus"
Div. of Infectious Diseases Grand Rounds, Univ. of Colorado Anschutz Sch. Medicine — March 3, 2021
- "Model-informed COVID-19 Vaccine Prioritization Strategies by Age & Serostatus"
Applied Mathematics Dynamics Seminar, University of Colorado Boulder — January 28, 2021
- "COVID-19 Testing Strategies: Mitigation vs Information"
University of British Columbia - BC COVID-19 Modeling Group — December 16, 2020
- "COVID-19 Testing Strategies: Mitigation vs Information"
MIT Media Lab - Trust in Pandemic Tech Seminar — December 4, 2020
- "Model-informed COVID-19 Vaccine Prioritization by Age and Serostatus"
Models of Infectious Disease Agent Study (MIDAS) Network seminar — November 20, 2020
- "Estimating SARS-CoV-2 seroprevalence & epidemiological parameters with uncertainty from serological surveys"
World Health Organization Solidarity II Sero-Epidemiology Meeting — November 5, 2020
- "Model-informed COVID-19 Vaccine Prioritization by Age and Serostatus"
EU/EEA National Immunisation Technical Advisory Group — October 15, 2020
- "Surveillance Testing of SARS-CoV-2"
UT Austin COVID-19 Modeling Consortium, University of Texas at Austin — September 23, 2020
- "Surveillance Testing of SARS-CoV-2"
McGill Genome Center, McGill University — August 13, 2020
- Panelist: COVID-19 Briefing on Testing
Ergo COVID-19 Intelligence Forum, New York City — August 11, 2020
- "Surveillance Testing of SARS-CoV-2"
COVID-19 Genomics Research Network Meeting, New York Genome Center, — August 3, 2020
- "Modeling the impacts of test sensitivity, frequency, and turnaround time for COVID-19 surveillance."
CSQUID/CIDID Seminar, *University of Florida College of Medicine*, Gainesville, FL. — July 29, 2020
- "SARS-CoV-2 Seroprevalence Estimation, Study Design, and Modeling"
BioStatistics Seminar, *University of Colorado Medical School*, Aurora, CO. — June 17, 2020
- "Explaining Gender Differences in Academics' Career Trajectories"
Webinar, *Computational Social Science Society of the Americas* — May 6, 2020
- "How do Infectious Disease Models Work?"
Collabeeration, BioFrontiers Institute, *University of Colorado Boulder*, Boulder, CO — April 1, 2020
- "Complex networks and *P. falciparum*: from evolution to epidemiology"
Computational BioSciences Seminar, *University of Colorado Medical School*, Aurora, CO. — Mar 9, 2020
- "Complex networks, math, and malaria: from evolution to epidemiology"
Applied Math Colloquium, *University of Colorado Boulder*, Boulder, CO — January 17, 2020

- "Complex networks and *P. falciparum*: from evolution to epidemiology"

Applied Math & Statistics Colloquium, *Colorado School of Mines*, Golden, CO. Nov 8, 2019

- Panelist: "Development of Trustworthy AI"

Mozilla Foundation & CU Data Science Team, Boulder, CO October 8, 2019

- "Complex networks and *P. falciparum*: from evolution to epidemiology"

Infectious Disease Epidemiology Seminar Series, *Harvard Sch. Pub. Health*, Boston, MA. May 9, 2019

- "Which community detection method is best?"

Analysis and Interpretation of Connectomes, *HHMI Janelia*, Ashburn, VA. May 22, 2018

- "A physical model for efficient ranking in networks."

Applied Math Seminar, *UNC Chapel Hill*, Chapel Hill, NC. Apr 11, 2018

- "A physical model for efficient ranking in networks."

Duke Network Analysis Center seminar, *Duke University*, Durham, NC. Apr 10, 2018

- Paper Unwind: "The misleading narrative of the canonical faculty productivity trajectory"

CompleNet, Boston, MA March 4, 2018

- "Gender, prestige, and productivity in academic hiring networks and career trajectories."

Annenberg School of Communication, *University of Pennsylvania*, Philadelphia, PA. Feb 13, 2018

- "A physical model for efficient ranking in networks"

Special Session: Network Science,
Joint Mathematics Meeting, San Diego, CA Jan 12, 2018

- "Estimating the entropy of activity in excitable networks"

Special Session: Emergent Phenomena in Discrete Models,
Joint Mathematics Meeting, San Diego, CA Jan 12, 2018

- "The ground truth about metadata and community detection in networks"

Special Session: Theory, Practice, and Applications of Graph Clustering,
Joint Mathematics Meeting, San Diego, CA Jan 11, 2018

- "Large-scale structures in networks: hidden communities and latent hierarchies."

Network Science School, *NetSciX*, Hangzhou, China. Jan 5, 2018

- "The assembly of prestige and status in networks."

Omidyar Network Applied Complexity Meeting, Santa Fe Institute, Santa Fe, NM. Dec 12, 2017

- "A physical model for efficient ranking in networks."

Physics Colloquium, *U Arkansas, Fayetteville.* Nov 17, 2017

- "A physical model for efficient ranking in networks."

Center for the Study of Complex Systems Seminar, *U Michigan.* Nov 9, 2017

- "Gender, prestige, and productivity in academic hiring networks and career trajectories."

NSF-FAST: Machine Learning for Discovery Science*,* Yerevan, Armenia. Oct 20, 2017

- "The dynamics of beneficial epidemics."

Dynamics of/on Complex Networks Satellite Symp., *NetSci 2017,* Indianapolis, IN June 20, 2017

- "Gender, prestige, and productivity in academic hiring networks and career trajectories."

Workshop on Gendered Creative Teams, *Central European Univ.*, Budapest, Hungary May 25, 2017

- "Gender, prestige, and productivity in academic hiring networks and career trajectories."

Seminar, Berkeley Institute for Data Science, *UC Berkeley*, Berkeley, CA Mar 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 Boulder* — April 9, 2015
- "Complex networks, rapid genetic recombination, and tricky malaria antigens."

Mathematics Colloquium, *Western New England University* — Nov 7, 2014
- "Efficiently inferring community structure in bipartite networks."

Seminar at Network Science and Graph Algorithms Program*, ICERM, Brown University* — Mar 4, 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
- "Critical dynamics in balanced excitable networks: neuronal avalanches, dynamic range, and ceaseless activity."

Dynamics & Complex Systems Seminar*, Applied Math, University of Colorado Boulder* — Feb 28, 2013
- "Critical dynamics in balanced excitable networks: neuronal avalanches, dynamic range, and ceaseless activity."

Seminar*, Center for Complex Network Research, Northeastern University* — Feb 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

Contributed or Submitted Talks and Presentations

- Int'l Conf. on Computational Social Science (IC2S2), *University of Amsterdam* — July 19, 2019
- SIAM Network Science (SIAM NS19), *Snowbird, UT* — May 23, 2019
- BioFrontiers Institute Advisory Board – *Boulder, CO* — April 17, 2019
- ASTMH Annual Meeting – poster, *New Orleans, LA* — October 31, 2018
- d3.js Boulder Meetup, *Boulder, CO* — August 30, 2018
- Int'l Conf. on Computational Social Science (IC2S2), *Northwestern University* — July 14, 2018
- NetSci, *Paris, France* — June 15, 2018
- Genetic Epidemiology of Malaria – poster [best poster award], *Sanger Institute, UK* — June 13, 2018
- CompleNet, Network Science Institute at Northeastern University, *Boston, MA.* — March 5, 2018
- Dynamical Systems Seminar, CU Boulder, *Boulder, CO.* — Nov 2, 2017
- StatOptML Seminar, CU Boulder, *Boulder, CO.* — Sept 12, 2017
- NetSci, *Indianapolis, IN.* — June 21, 2017
- Complex Systems Summer School, Santa Fe Institute, *Santa Fe, NM.* — June 14, 2017
- YConf, YCombinator Research, *San Francisco, CA.* — June 10, 2017
- Santa Fe Science Writers' Workshop, Santa Fe Institute, *Santa Fe, NM.* — May 2, 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
- Int'l Conf. on the Science of Science, *Library of Congress, Washington D.C.* — April 7, 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 [best poster award], *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, *OCIAM, Oxford University, UK* — March 8, 2013
- Dynamics Days – poster, *University of Colorado Boulder* — January 3, 2013
- Freeman Symposium, *Harvard School of Public Health* — December 14, 2012
- Ph.D. Dissertation Defense, *University of Colorado Boulder* — April 5, 2012
- Front Range Applied Mathematics Student Conference, *Univ. of Colorado Denver* — March 3, 2012
- Dynamics Days – poster, *University of Maryland* — January 3, 2012
- Comprehensive Examination, *University of Colorado Boulder* — September 27, 2011
- Front Range Applied Mathematics Student Conference, *Univ. of Colorado Denver* — March 5, 2011
- Dynamics Days 2011, *Duke University* — January 6, 2011
- Complex and Dynamical Systems Seminar, *University of Colorado Boulder* — October 20, 2010
- Nonlinear Dynamics of Networks (NTD10) – poster, *University of Maryland* — April 4, 2010
- Complex and Dynamical Systems Seminar, *University of Colorado Boulder* — April 1, 2010
- Front Range Applied Mathematics Student Conference, *Univ. of Colorado Denver* — March 6, 2010
- Dynamics Days 2010 – poster, *Northwestern University* — January 3, 2010

Supported Workshops

- Model-Based Research and Reproducibility Workshop, Center for Open Science — Feb 4-5, 2020
- Network Null Models Working Group, NIMBIOS — Oct 23-26, 2019
- Decision Processes in Networks, Triennial Choice Symposium — May 29-June 2, 2019
- The Dynamics of Discovery: Is Science Slowing and Can We Speed It Up? — March 16-17, 2018

Awards, Affiliations, Accreditations

- Colorado – Robert L. Stearns Award – Colorado — 2021
- Colorado – Provost's Faculty Achievement Award — 2021
- Colorado – Research & Innovation Office Faculty Fellow — 2020
- Models of Infectious Disease Agent Study Network – Member — 2020 - present
- Network Science Society – Member — 2014 - present
- American Mathematical Society – Member — 2014 - present
- American Society of Tropical Medicine and Hygiene – Member — 2013 - present
- Society of Industrial and Applied Mathematics – Member — 2008 - present
- Genetic Epidemiology of Malaria – Best Poster — June, 2018
- NIH "Protecting Human Research Participants" – certification — June, 2016
- NetSci 2014 – Best Poster — June, 2014
- Physical Review Letters – "Inhibition causes ceaseless…" – Editors' Suggestion — April, 2014
- National Postdoctoral Association – Member — 2012 - 2015
- Arts and Sciences Dean's Teaching Assistant Fellowship — Spring 2010
- Dynamics Days 2010 – Best Poster — January, 2010
- Colorado – Lead Teaching Assistant, Dept. of Applied Mathematics — 2009 - 2010

Advising

Postdocs

- Dr. Eun Lee, Computer Science — 2020 - present
- Dr. Katherine Wootton, Computer Science — 2021 - present

PhD Students

- Erik Johnson, Applied Mathematics — 2021
- Tzu-Chi Yen, Computer Science (co-adv: Josh Grochow) — 2018 - present
- K. Hunter Wapman, Computer Science — 2019 - present

- Nicholas LaBerge, Computer Science (co-adv: Aaron Clauset) 2019 - present
- Ian van Buskirk, Computer Science (co-adv: Aaron Clauset) 2019 - present
- Kate Bubar, Applied Mathematics 2020 - present
- Katherine Spoon, Computer Science (co-adv: Aaron Clauset) 2020 - present
- Casey Middleton, Computer Science 2021 - present

PhD Rotation Students (IQ Biology)
- Casey Middleton 2021
- Sharon Wu 2020
- Elise Tate 2019
- Kate Bubar 2019
- Sierra Jech 2019
- Phillip Benson 2019
- Dieu My Nguyen 2018
- Michael Smallegan 2018

Masters Students
- Upasana Dutta, M.S. Computer Science, Colorado 2020 - present
- Aaron Aaeng, M.S. Computer Science, Colorado 2020
- Marshall Y. Carpenter, M.S. Applied Math, Colorado 2012
  (Co-adv: Juan G. Restrepo, NSF MCTP)

Undergraduate Students
- Aloha Churchill, University of Colorado Boulder 2020 - 2021
- Suchita Lulla, University of Colorado Boulder 2018 - 2021
- Aparajithan Venkateswaran, University of Colorado Boulder, NSF REU 2018 - 2020
- Mark Wilmes, Computer Science. 2019
- Suyog Soti, University of Colorado Boulder 2018 - 2019
- Katie Younglove, University of Colorado Boulder, NSF REU 2018 - 2019
- Robert Steele, University of Colorado Boulder 2018
- Phuc Nguyen, Macalester College via the Santa Fe Institute 2017
- Maya Banks, Carleton College via the Santa Fe Institute 2017

High School Students
- William McKinnon, High School Student, Santa Fe Institute 2016
- Kat Wicks, High School Student, Santa Fe Institute 2015 - 2016

Teaching

University of Colorado Boulder **Boulder, CO, USA**
- CSCI 2897 (Calculating Biological Quantities) Fall 2021
- [new course] CSCI 2897 (Calculating Biological Quantities) Spring 2021
- CSCI 5352 (Network Analysis and Modeling) Fall 2020
- CSCI 5352 (Network Analysis and Modeling) Fall 2019
- CSCI 4802/5802 (Data Science Team) Fall 2019
- CSCI 4802/5802 (Data Science Team) Spring 2019
- CSCI 5352 (Network Analysis and Modeling) Fall 2018
- CSCI 3022 (Intro to Data Science with Probability and Statistics) Fall 2018
- CSCI 3022 (Intro to Data Science with Probability and Statistics) Spring 2018
- [new course] CSCI 3022 (Intro to Data Science with Probability and Statistics) Fall 2017

Complex Networks Winter Workshop **Quebec City, Quebec**
- Networks and hierarchies Jan 6, 2021

- Large-scale structures in networks: Hidden communities and latent hierarchies — Dec 15, 2019

NetSci 2019 International Conference on Network Science — **Burlington, VT, USA**
- Large-scale structures in networks: Hidden communities and latent hierarchies — May 27, 2019

Santa Fe Institute - Complex Systems Summer School — **Santa Fe, NM, USA**
- Networks & Hierarchies — June 24-25, 2019
- Networks & Hierarchies — June 25-26, 2018

University of Michigan — **Ann Arbor, MI, USA**
- Comp. Soc. Sci. Workshop (Communities, hierarchies: large-scale network structure) — Nov 10, 2017

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 – TDModNet Modeling Workshop* (networks in genetics & epidemiology) — October 3, 2013

University of Colorado - Predoctoral — **Boulder, CO, USA**
- *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

Editorial and Referee Work

Guest Academic Editor
- PLOS Biology

Grant Review
- NSF - Science of Science and Information Policy (SciSIP)
- NSF - Division of Mathematical Sciences - Dynamical Systems (DMS)
- NSF/NIH - Science of Science: Discovery, Communication, Impact & SCISIPBIO

Journal Review
- ACM Transactions on Knowledge Discovery from Data (TKDD)
- Communications of the ACM
- Europhysics Letters (EPL)
- IEEE Security and Privacy
- Journal of Complex Networks
- Journal of Infectious Diseases
- Journal of Machine Learning Research (JMLR)
- 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
- Nature Microbiology

- New England Journal of Medicine
- Physical Review Letters (PRL)
- Physical Review X (PRX)
- Physical Review E (PRE)
- Physical Review Research (PRR)
- Physica A
- PLoS Biology
- PLoS Computational Biology
- PLoS Neglected Tropical Diseases
- PLoS ONE
- Proceedings of the National Academy of Sciences of the USA (PNAS)
- Science
- Science Advances
- Science Translational Medicine
- SIAM Journal on Mathematics of Data Science (SIMODS)
- Vaccines
- Wellcome Open Research

Conferences
- Program Committee, Int'l Conf. on Computational Social Science (IC2S2 2017, 2018, 2019, 2020, 2021)
- Program Committee, NetSci 2017, 2019, 2020
- Program Committee, ICWSM Workshop: Beyond Online Data: Tackling Challenging Social Science Questions
- Program Committee, 9th Int'l Conf. on Complex Networks (CompleNet 18)
- Program Committee, NetSciX 2018, 2020
- Program Committee, Int'l World Wide Web Conf. (WWW 17, 18)
- Program Committee, SIAM Network Science 2016 - 2019 (NS 16, 17, 18, 19)
- 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* - A Satellite Symposium of the NetSci Conference.

Rome, Italy (with T. Peixoto, T. Eliassi-Rad, B. Fosdick, and A. Clauset)	June, 2020
Burlington, Vermont (with T. Eliassi-Rad, B. Fosdick, and A. Clauset)	May 27, 2019
Paris, France (with T. Eliassi-Rad, B. Fosdick, and A. Clauset)	June 11, 2018
Indianapolis, Indiana (with T. Broderick, B. Fosdick, and A. Clauset)	June 19, 2017
Seoul, Korea (with B. Fosdick, A. Z. Jacobs, and A. Clauset)	May 31, 2016
Zaragoza, Spain (with L. Peel, A. Z. Jacobs, and A. Clauset)	June 1, 2015
Berkeley, California (with L. Peel, A. Z. Jacobs, and A. Clauset)	June 2, 2014

- *Slice of Science* — 2016 - 2017
  Santa Fe, NM. Ongoing Santa Fe Institute talk series.
  Organizer
- *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 Platig.
- *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.

- *TDModNet 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 Denver.
  Organized with Daniel N. Kaslovsky, Anne Dougherty, *et al.*
- *SIAM Graduate Student Chapter Speaker Series* Spring 2009
  University of Colorado Boulder.
  Co-organized with Daniel N. Kaslovsky.

PhD Thesis Committees

- Nicholas Landry, Applied Mathematics. Adv: Juan G. Restrepo Expected 2022
- Graham Kesler O'Connor, Applied Mathematics. Adv: Manuel Lladser Expected 2023
- Lucas Hayne, Computer Science. Adv: McKell Carsten Expected 2023
- Aislyn Keyes, Ecology & Evolutionary Biology. Adv: Laura Dee Expected 2023
- Samantha Molnar, Computer Science. Adv: Elizabeth Bradley 2021
- Allison Morgan, Computer Science. Adv: Aaron Clauset 2021
- Ignacio Tripodi, Computer Science. Adv: Robin Dowell 2020
- Antony Pearson, Applied Mathematics, Adv: Manuel Lladser 2020
- Lee Korshoj, Chem. & Biol. Engr. Adv: Anushree Chatterjee and Prashant Nagpal 2020
- Richard Carter Tillquist, Applied Mathematics, Adv: Manuel Lladser 2020
- Anna Broido, Computer Science. Adv: Aaron Clauset 2019
- Amir Ghasemian, Computer Science. Adv: Aaron Clauset 2018
- Jean-Gabriel Young, Physics, Université Laval, Adv: Louis Dube 2018

Undergraduate Thesis Committees

- Maxwell Wenzel, Computer Science. Adv: James Martin 2020
- Ian Wilkins, Computer Science. Adv: James Martin 2020
- Maxine Hartnett, Computer Science. Adv: Elizabeth Bradley 2019
- Brandon Zink, Computer Science. Adv: Rhonda Hoenigman 2019

Institutional Committees

- Colorado, Computer Science Pedagogy Committee 2021- present
- Colorado, Vaccine Policy & Guidance Subcommittee 2021
- Colorado, EMPOWERS Oversight Committee 2020 - present
- Colorado, Computer Science Faculty Search Committee 2019 - 2020
- Colorado, Interdisc. Quant. Biol. Program (IQBio), Academic Advising Committee 2018 - 2020
- Colorado, BioFrontiers Institute, Council (Formerly called Task Force) 2017 - present
- Colorado, Interdisc. Quant. Biol. Program (IQBio), Curriculum Committee 2017 - present
- Colorado, Computer Science, Undergraduate Curriculum Committee 2018 - 2019
- Colorado, BioFrontiers Institute, Social Committee (BioFunTiers) 2017 - 2018
- Colorado, Interdisciplinary Quant. Biol. Program (IQBio), Grad. Admissions 2017 - 2018
- Santa Fe Institute, Complex Systems Summer School Admissions 2016 - 2017
- Santa Fe Institute, Omidyar Fellowship Review & Selection 2015 - 2016
- Colorado, Office of Discrimination and Harassment Review 2010 - 2012
- Colorado, SIAM Graduate Student Chapter 2008 - 2010

Outreach

- "Prioritizing Vaccines: Who Should Get Them First and Why?" November 20, 2020
  BioFrontiers Institute Community COVID-19 Session III
- "COVID-19 Surveillance Testing: A Way Out?" September 17, 2020
  College of Engineering & Applied Sciences CU Boulder COVID-19 Webinar
- "How do infectious disease models work?" April 13, 2020

BioFrontiers Institute Community COVID-19 Session I

- "What it is to be a Scientist" May 4, 2016
  Santa Fe Institute
  Keynote, SFI High School Prize for Scientific Excellence
- "What it is to be a Scientist" 2016-2019
  Santa Fe Institute
  REU Program Mentorship

Other Service & Outreach

Faculty Sanity **Boulder, CO**
A monthly, open, unstructured meetup for junior faculty at CU Boulder, all departments.
Founder, Organizer 2018 - present

March for Science - Santa Fe **Santa Fe, NM**
Lead Organizer April 22, 2017

New Mexico Corrections / Penitentiary of New Mexico **Santa Fe, NM**
Volunteer math teacher and tutor January 2016 - May 2017

Santa Fe Alliance for Science **Santa Fe, NM**
Science fair judge 2015 - 2017

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