Aaron Clauset

CONTACT INFORMATION	Department of Computer Science	*voice:*	303–492–6643
	University of Colorado at Boulder	*fax:*	303–492–2844
	430 UCB	*email:*	aaron.clauset@colorado.edu
	Boulder CO, 80309-0430 USA	*web:*	www.santafe.edu/~aaronc

RESEARCH INTERESTS

Network science (methods, theories, applications); Data science, statistical inference, machine learning; Models and simulations; Collective dynamics and complex systems; Rare events, power laws and forecasting; Computational social science; Computational biology and biological computation.

EDUCATION

Ph.D. Computer Science, University of New Mexico (with distinction)	2002 – 2006
B.S. Physics, Haverford College (with honors and concentration in Computer Science)	1997 – 2001

ACADEMIC POSITIONS

Associate Professor, Computer Science Dept., *University of Colorado, Boulder*	2018 – present
Core Faculty, BioFrontiers Institute, *University of Colorado, Boulder*	2010 – present
External Faculty, *Santa Fe Institute*	2012 – present
Affiliated Faculty, Ecology & Evo. Biology Dept., *University of Colorado, Boulder*	2011 – present
Affiliated Faculty, Applied Mathematics Dept., *University of Colorado, Boulder*	2012 – present
Affiliated Faculty, Information Dept., *University of Colorado, Boulder*	2015 – present
Assistant Professor, Computer Science Dept., *University of Colorado, Boulder*	2010 – 2018
Omidyar Fellow, *Santa Fe Institute*	2006 – 2010

EDITORIAL POSITIONS

Deputy Editor, *Science Advances*, AAAS	2017 – present
Associate Editor, *Science Advances*, AAAS	2014 – 2017
Associate Editor, *Journal of Complex Networks*, Oxford University Press	2012 – 2017

HONORS & AWARDS (SELECTED)

Provost Faculty Achievement Award, U. Colorado, Boulder	2019
Top 20 Teachers, College of Engineering, U. Colorado, Boulder	2016
Erdős-Rényi Prize in Network Science	2016
NSF CAREER Award	2015
Kavli Fellow	2014
Santa Fe Institute Public Lecturer (http://bit.ly/I6t9gf)	2010
Graduation Speaker, U. New Mexico School of Engineering Convocation	2006
Outstanding Graduate Student Award, U. New Mexico School of Engineering	2006

GOOGLE SCHOLAR

scholar.google.com/citations?user=e7VI_HcAAAAJ

* indicates an undergraduate coauthor; ° indicates equal contribution

MANUSCRIPTS UNDER REVIEW

H. Hosseinmardi, A. Ghasemian, **A. Clauset**, D. M. Rothschild, M. Mobiush, and D. J. Watts, "Evaluating the scale, growth, and origins of right-wing echo chambers on YouTube." Submitted (2020). (Preprint at arxiv:2011.12843)

A. C. Morgan, S. F. Way, M. J. D. Hoefer, D. B. Larremore, M. Galesic, and **A. Clauset**, "The unequal impact of parenthood in academia." Submitted (2020).

A. J. Kavran and **A. Clauset**, "Denoising large scale molecular profiling data using network filters." Submitted (2020). (Preprint at https://doi.org/10.1101/2020.03.12.989244)

PUBLICATIONS
(REFEREED)

K. R. Jordan, M. J. Sikora, J. E. Slansky, A. Minic, J. K. Richer, M. R. Moroney, J. C. Costello, **A. Clauset**, K. Behbakht, T. R. Kumar, and B. G. Bitler, "The capacity of the ovarian cancer tumor microenvironment to integrate inflammation signaling conveys a shorter disease-free interval." *Journal of Clinical Research* **26**(23), 6362–6373 (2020).
(Preprint at `https://doi.org/10.1101/2020.04.14.041145`)

A. Ghasemian, H. Hosseinmardi, A. Galstyan, E. M. Airoldi, and **A. Clauset**, "Stacking models for nearly optimal link prediction in complex networks." *Proc. Natl. Acad. Sci. USA* **117**(38), 23393–23400 (2020). (Preprint at `arxiv:1909.07578`) [Chosen for an invited Commentary editorial]

S. F. Way, A. C. Morgan, D. B. Larremore°, **A. Clauset**°, "Productivity, prominence, and the effects of academic environment." *Proc. Natl. Acad. Sci. USA* **116**(22), 10729–10733 (2019).

A. Ghasemian, H. Hosseinmardi, and **A. Clauset**, "Evaluating overfit and underfit in models of network community structure." *IEEE Trans. Knowledge and Data Engineering* **32**(9), 1722–1735 (2019). (Preprint at `arxiv:1802.10582`)

S. F. Way, S. Gil, I. Anderson, and **A. Clauset**, "Environmental changes and the dynamics of musical identity." *Proc. 13th International AAAI Conference on the Web and Social Media* (ICWSM), **13**, 527–536 (2019). (Preprint at `arxiv:1904.04948`)

A. D. Broido and **A. Clauset**, "Scale-free networks are rare." *Nature Communications* **10**, 1017 (2019). (Preprint at `arxiv:1801.03400`) [19th most-read article in Physics in *Nat. Comms.* in 2019] [Chosen for a special Comment editorial]

A. C. Morgan, D. J. Economou, S. F. Way and **A. Clauset**, "Prestige drives epistemic inequality in the diffusion of scientific ideas." *EPJ Data Science* **7**, 40 (2018).
(Preprint at `arxiv:1805.09966`)

A. C. Morgan, S. F. Way and **A. Clauset**, "Automatically assembling a full census of an academic field." *PLOS ONE* **13**(8), e0202223 (2018). (Preprint at `arxiv:1804.02760`)

A. Clauset, "Trends and fluctuations in the severity of interstate wars." *Science Advances* **4**(2), eaao3580 (2018).

L. R. Thompson, J. G. Sanders, [et al. including **A. Clauset**], "A communal catalogue reveals Earth's multiscale microbial diversity." *Nature* **551**, 457–463 (2017).

S. F. Way, A. C. Morgan, **A. Clauset**°, and D. B. Larremore°, "The misleading narrative of the canonical faculty productivity trajectory." *Proc. Natl. Acad. Sci. USA* **114**(44), E9216–E9223 (2017). (Preprint at `arxiv:1612.08228`) [Also accepted at *ICWSM* 2017, social science track (non-archival)]

N. Connor, A. Barbaran and **A. Clauset**, "Using null models to infer microbial co-occurrence networks." *PLOS ONE* **12**(5), e0176751 (2017). (Preprint at `http://dx.doi.org/10.1101/070789`)

L. Peel, D. B. Larremore, and **A. Clauset**, "The ground truth about metadata and community detection in networks." *Science Advances* **3**(5), e1602548 (2017). (Preprint at `arxiv:1608.05878`)

D. Taylor, S. A. Myers, **A. Clauset**, M. A. Porter, P. J. Mucha, "Eigenvector-based centrality measures for temporal networks." *Multiscale Modeling and Simulation* **15**(1), 537–574 (2017). (Preprint at `arxiv:1507.01266`)

A. Ghasemian, P. Zhang, **A. Clauset**, C. Moore, and L. Peel, "Detectability thresholds and optimal

algorithms for community structure in dynamic networks." *Physical Review X* **6**, 031005 (2016). (Preprint at `arxiv:1506.06179`)

M. E. J. Newman and **A. Clauset**, "Structure and inference in annotated networks." *Nature Communications* **7**, 11863 (2016). (Preprint at `arxiv:1507.04001`)
[Included by *Nat. Comms.* in a special collection of papers on "Network structure and dynamics"]

S. F. Way, D. B. Larremore, and **A. Clauset**, "Gender, productivity, and prestige in computer science faculty hiring networks." *Proc. 25th International Conference on World Wide Web* (WWW), 1169–1179 (2016). (Preprint at `arxiv:1602.00795`)

L. Peel and **A. Clauset**, "Predicting sports scoring dynamics with restoration and anti-persistence." *Proc. 2015 IEEE International Conference on Data Mining* (ICDM), 339–348 (2015). (Preprint at `arxiv:1504.05872`)

D. B. Larremore, S. A. Sundararaman, W. Liu, W. R. Proto, **A. Clauset**, D. E. Loy, S. Speede, 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).

A. Z. Jacobs, S. F. Way, J. Ugander and **A. Clauset**, "Assembling thefacebook: Using heterogeneity to understand online social network assembly." *Proc. ACM Web Science Conference* (WebSci 2015), article 18 (Preprint at `arxiv:1503.06772`)

A. Clauset, M. Kogan and S. Redner, "Safe leads and lead changes in competitive team sports." *Physical Review E* **91**, 062815 (2015). (Preprint at `arxiv:1503.03509`)
[Chosen as an "Editors' Suggestion"]

A. Clauset, S. Arbesman and D. B. Larremore, "Systematic inequality and hierarchy in faculty hiring networks." *Science Advances* **1**(1), e1400005 (2015). [One of "Top Ten" *Science Advances* articles of 2015.] [One of the top 100 articles of 2015, by almetrics.com.]

L. Peel and **A. Clauset**, "Detecting change points in the large-scale structure of evolving networks." *Proc. 29th Conference on Artificial Intelligence* (AAAI), 2914–2920 (2015). (Preprint at `arxiv:1403.0989`)

C. Aicher*, A. Z. Jacobs and **A. Clauset**, "Learning latent block structure in weighted networks." *Journal of Complex Networks* **3**(2), 221–248 (2015). (Preprint at `arxiv:1404.0431`)

A. Scharpf, G. Schneider, A. Nöh and **A. Clauset**, "Forecasting of the risk of extreme massacres in Syria." *European Review of International Studies* **1**(2), 50–68 (2014).

D. B. Larremore, **A. Clauset** and A. Z. Jacobs, "Efficiently inferring community structure in bipartite networks." *Physical Review E* **90**, 012805 (2014). (Preprint at `arxiv:1403.2933`)
[Best Poster award at NetSci 2014]

P. Sah, L.O. Singh, **A. Clauset** and S. Bansal, "Exploring community structure in biological networks with random graphs." *BMC Bioinformatics* **14**, 220 (2014).
(Preprint at `biorxiv.org/content/early/2013/12/22/001545`) [Highly accessed paper]

S. Merritt and **A. Clauset**, "Scoring dynamics across professional team sports: tempo, balance and predictability." *EPJ Data Science* **3**, 4 (2014). (Preprint at `arxiv:1310.4461`)
[Highly accessed paper]

Y. Virkar and **A. Clauset**, "Power-law distributions in binned empirical data."

Annals of Applied Statistics **8**(1), 89–119 (2014). (Preprint at `arxiv:1208.3524`)

L. Shoemaker and **A. Clauset**, "Body mass evolution and diversification within horses (family Equidae)." *Ecology Letters* **17**(2), 211–220 (2014).

A. Clauset and R. Woodard, "Estimating the historical and future probabilities of large terrorist events." *Annals of Applied Statistics* **7**(4), 1838–1865 (2013). (Preprint at `arxiv:1209.0089`)
[Subject of a special session at ASA Joint Statistical Meetings, Montreal Canada, 5 August 2013]

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).
(Preprint at `arxiv:1308.5254`)

S. Merritt and **A. Clauset**, "Environmental structure and competitive scoring advantages in team competitions." *Scientific Reports* **3**, 3067 (2013). (Preprint at `arxiv:1304.1039`)

A. Scharpf, G. Schneider, A. Nöh and **A. Clauset**, "The blood trail of the veto: A forecast of the risk of extreme massacres in Syria." *Zeitschrift für Friedens – und Konfliktforschung* **2**(1), 6–31 (2013). [In German]

S. Merrit, A. Z. Jacobs, W. Mason and **A. Clauset**, "Detecting friendship within dynamic online interaction networks." *Proc. 7th International AAAI Conference on Weblogs and Social Media* (ICWSM), 380–389 (2013). (Preprint at `arxiv:1303.6372`)

B. J. Mills, J. J. Clark, M. Peeples, W. R. Haas Jr., J. M. Roberts Jr., B. Hill, D. L. Huntley, L. Borck, R. L. Breiger, **A. Clauset**, and M. S. Shackley, "Transformation of social networks in the late Prehispanic U.S. Southwest." *Proc. Natl. Acad. Sci. USA* **110**(15): 5785–5790 (2013).

A. Clauset, "How large should whales be?" *PLOS ONE* **8**(1), e53967 (2013).
(Preprint at `arxiv:1207.1478`)

W. Mason and **A. Clauset**, "Friends FTW! Friendship, collaboration and competition in *Halo: Reach*." *Proc. 2013 Conference on Computer Supported Cooperative Work* (CSCW), 375–386 (2013). (Preprint at `arxiv:1203.2268`)

A. Clauset and K. S. Gleditsch, "The developmental dynamics of terrorist organizations." *PLOS ONE* **7**(11), e48633 (2012). (Preprint at `arxiv:0906.3287`)

B. H. Good*, Y.-A. de Montjoye and **A. Clauset**, "The performance of modularity maximization in practical contexts." *Physical Review E* **81**, 046106 (2010). (Preprint at `arxiv:0910.0165`)
[Chosen as an "Editors' Suggestion"]

A. Clauset, L. Heger, M. Young and K. S. Gleditsch, "The strategic calculus of terrorism: Substitution and competition in the Israel-Palestine conflict." *Cooperation & Conflict* **46**(1), 6–33 (2010).

A. Clauset and F. W. Wiegel, "A generalized aggregation-disintegration model for the frequency of severe terrorist attacks." *Journal of Conflict Resolution* **54**(1), 179–197 (2010).
(Preprint at `arxiv:0902.0724`)

A. Clauset, C. R. Shalizi and M. E. J. Newman, "Power-law distributions in empirical data." *SIAM Review* **51**(4), 661–703 (2009). (Preprint at `arxiv:0706.1062`)

D. Achlioptas, **A. Clauset**, D. Kempe and C. Moore, "On the bias of traceroute sampling: Or, power-law degree distributions in regular graphs." *Journal of the ACM* **56**(4), article 21,

28 pages (2009). (Preprint at `arxiv:cond-mat/0503087`) [journal version of STOC 2005 paper]

N. Eagle, J. Quinn and **A. Clauset**, "Methodologies for continuous cellular tower data analysis."
Proc. 7th International Conference on Pervasive Computing (Pervasive 2009), 342–353.

A. Clauset and S. Redner, "Evolutionary model of species body mass diversification."
Physical Review Letters **102**, 038103 (2009). (Preprint at `arxiv:0808.4014`)

A. Clauset, D. J. Schwab and S. Redner, "How many species have mass M?"
American Naturalist **173**, 256–263 (2009). (Preprint at `arxiv:0808.3433`)

A. Clauset, H. G. Tanner, C. T. Abdallah and R. H. Byrne, "Controlling across complex networks
– Emerging links between networks and control." *Annual Reviews in Control* **32**, 183–192 (2008).

A. Clauset and D. H. Erwin, "The evolution and distribution of species body size."
Science **321**, 399–401 (2008). (Preprint at `arxiv:0901.0251`)

A. Clauset, C. Moore and M. E. J. Newman, "Hierarchical structure and the prediction of missing
links in networks." *Nature* **453**, 98–101 (2008). (Preprint at `arxiv:0811.0484`)
[Chosen for a special News & Views editorial]

A. Clauset, M. Young and K. S. Gleditsch, "On the frequency of severe terrorist attacks."
Journal of Conflict Resolution **51**(1), 58–88 (2007). (Preprint at `arxiv:physics/0606007`)

V. Kalapala, V. Sanwalani, **A. Clauset** and C. Moore, "Scale invariance in road networks."
Physical Review E **73**, 026130 (2006). (Preprint at `arxiv:physics/0510198`)

J. T. Ayers, **A. Clauset**, J. D. Schmitt, L. P. Dwoskin and P. A. Crooks, "Molecular modeling of
mono- and bis-quaternary ammonium salts as ligands at the $\alpha 4\beta 2$ nicotinic acetylcholine receptor
subtype using nonlinear techniques." *American Association of Pharmaceutical Scientists Journal*
7(3), E678–85 (2005).

Y. D. Xiao, **A. Clauset**, R. Harris, E. Bayram, P. Santago II, and J. D. Schmitt,
"Supervised self-organizing maps in QSAR I: Robust behavior with underdetermined datasets."
Journal of Chemical Information and Modeling **46**(6), 1749–1758 (2005).

A. Clauset, "Finding local community structure in networks."
Physical Review E **72**, 026132 (2005). (Preprint at `arxiv:physics/0503036`)

D. Achlioptas, **A. Clauset**, D. Kempe and C. Moore, "On the bias of traceroute sampling (or:
Why almost every network looks like it has a power law)." ACM *Proc. 37th Symp. on Theory of
Computing* (STOC 2005), 694–703.

A. Clauset and C. Moore, "Accuracy and scaling phenomena in Internet mapping."
Physical Review Letters **94**, 018701 (2005). (Preprint at `arxiv:cond-mat/0410059`)

A. Clauset, M. E. J. Newman and C. Moore, "Finding community structure in very large networks."
Physical Review E **70**, 066111 (2004). (Preprint at `arxiv:cond-mat/0408187`)

E. Bayram, P. Santago II, R. Harris, Y. D. Xiao, **A. Clauset** and J. D. Schmitt, "Genetic algo-
rithms and self-organizing maps: A powerful combination for modeling complex QSAR and QSPR
problems." *Journal of Computer-Aided Molecular Design* **18** (7-9), 483–493 (2004).

WORKSHOP
PAPERS

A. Ghasemian, A. Galstyan, and **A. Clauset**, "Highly Accurate Link Prediction in Networks Using

Stacked Generalization." *WSDM* International Workshop on Heterogeneous Networks Analysis and Mining (HeteroNAM 2018).

A. Z. Jacobs and **A. Clauset**, "A unified view of generative models for networks: models, methods, opportunities, and challenges." *NIPS* Workshop on Networks: From Graphs to Rich Data (2014). (Preprint at `arxiv:1411.4070`)

L. Peel and **A. Clauset**, "Change-point detection in temporal networks using hierarchical random graphs." *KDD* Workshop on Outlier Detection & Description under Data Diversity (2014).

S. Merritt and **A. Clauset**, "Social network dynamics in a massive online game: Network turnover, non-densification, and team engagement in Halo Reach." Eleventh Workshop on Mining and Learning with Graphs (MLG) (2013). (Preprint at `arxiv:1306.4363`)

C. Aicher*, A. Z. Jacobs and **A. Clauset**, "Adapting the stochastic block model to edge-weighted networks." *ICML* Workshop on Structured Learning (2013). (Preprint at `arxiv:1305.5782`)

N. Eagle, **A. Clauset** and J. Quinn, "Location segmentation, inference and prediction for anticipatory computing." *Proc. AAAI Spring Symposium*, 20–25 (2009).

A. Clauset and N. Eagle. "Persistence and periodicity in a dynamic proximity network." DIMACS Workshop on Computational Methods for Dynamic Interaction Networks (Piscataway), 2007. (Preprint at `arxiv:1211.7343`).

A. Clauset, C. Moore and M. E. J. Newman, "Structural inference of hierarchies in networks." *Proc. Workshop on Statistical Network Analysis, 23rd International Conference on Machine Learning* (ICML '06). E. M. Airoldi et al., Eds., *Lecture Notes in Computer Science* **4503**, 1–13 (2007). (Preprint at `arxiv:physics/0610051`)

Book Chapters **A. Clauset**, "On the frequency and severity of interstate wars." In Nils Petter Gleditsch (Ed.), *Lewis F. Richardson — His Intellectual Legacy and Influence in the Social Sciences*, Springer Pioneer Series (2020). (Preprint at `arxiv:1901.05086`)

K. S. Gleditsch and **A. Clauset**, "Trends in Conflict." In A. Gheciu and W. C. Wohlforth (Eds.), *The Oxford Handbook of International Security* (pp 227–244) Oxford University Press (2018).

Other Publications N. Connor and **A. Clauset**, "Predicting the outcomes of policy diffusion from U.S. states to federal law." Preprint, `arxiv:1810.08988` (2018).

J. I. Perotti, C. J. Tessone, **A. Clauset** and G. Caldarelli, "Thermodynamics of the minimum description length on community detection." Preprint, `arxiv:1806.07005` (2018).

K. Ikehara and **A. Clauset**, "Characterizing the structural diversity of complex networks across domains." Preprint, `arxiv:1710.11304` (2017).

A. Clauset, D. B. Larremore and R. Sinatra, "Data-driven predictions in the science of science." *Science* **355**, 477–480 (2017). [Invited Perspective piece]

R. C. Tillquist, L. Shoemaker, K. B. Knight, and **A. Clauset**, "The evolution of primate body size: Left-skewness, maximum size, and Copes rule." Preprint, `http://dx.doi.org/10.1101/092866` (2016).

L. Fortunato and **A. Clauset**, "Revisiting the effect of red on competition in humans." Preprint,

`http://dx.doi.org/10.1101/086710` (2016).

A. Z. Jacobs, J. A. Dunne, C. Moore, and **A. Clauset**, "Untangling the roles of parasites in food webs with generative network models." Preprint, `arxiv:1505.04741` (2015).

R. T. Gill, A. L. Halweg-Edwards, S. F. Way and **A. Clauset**, "Synthesis aided design: The biological design-build-test engineering paradigm?" *Biotechnology and Bioengineering* **113**(1), 7–10 (2016).

C. R. Shalizi, A. Z. Jacobs*, K. L. Klinkner and **A. Clauset**, "Adapting to non-stationarity with growing expert ensembles." Preprint, `arxiv:1103.0949` (2011).

A. Clauset, M. Young and K. S. Gleditsch, "A novel explanation of the power-law form of the frequency of severe terrorist events: Reply to Saperstein." *Peace Economics, Peace Science and Public Policy* **16**(1), Article 12 (2010).

A. Clauset, "Story-telling, statistics, and other grave scientific insults." *Nature* Soapbox Science Blog (posted 27 October 2010). `http://tinyurl.com/2gx7z5l`

A. Clauset, "A theoretician ponders what physics has to offer ecology." *Nature* **465**, 139 (2010).

N. Eagle, **A. Clauset**, A. Pentland and D. Lazer, "Multi-dimensional edge inference: Response to comment by Dr. Adams." *Proc. Natl. Acad. Sci. USA* **107**(9), E31 (2010).

A. Clauset and C. Moore, "How do networks become navigable?"
Preprint, `arxiv:cond-mat/0309415` (2003).

POPULAR PRESS

D. B. Larremore, A. C. Morgan and **A. Clauset**, "More inclusive scholarship begins with active experimentation." *The Chronicle of Higher Education*, published online 1 November, `http://bit.ly/2lFB1Go` (2017).

D. B. Larremore and **A. Clauset**, "Why predicting the future is more than just horseplay." *The Christian Science Monitor*, published online 24 April, `http://bit.ly/2omFZbX` (2017).

J. Warner and **A. Clauset**, "The Academy's dirty secret." *Slate*, published online 23 February, `http://slate.me/1MNdKGH` (2015).

J. Warner and **A. Clauset**, "What same-sex marriage means for the future of recreational weed." *Pacific Standard*, published online 24 October, `http://bit.ly/1tdlut1` (2014).

PATENTS

A. C. Morgan, S. F. Way, and **A. Clauset**, "System and methods for crawling web pages and parsing relevant information stored in web pages." U.S. Patent Application 20200293581, Number 62/593,804 (2020).

INDUSTRY CONSULTING		
Scientific & Technical Consultant, *Respond Software Inc.*, Mountain View CA	2017
Scientific & Technical Consultant, *FullContact Inc.*, Denver CO	2015 – 2017
Scientific & Technical Consultant, *Institute for Defense Analysis*, Alexandria VA	2010 – 2014
Corporate Advisory Board, *33across LLC*, New York NY	2008 – 2012
Scientific & Technical Consultant, *33across LLC*, New York NY	2007 – 2012
Strategy & Management Consultant, *FischerJordan LLC*, New York NY	2005

GRANTS
(PI OR CO-PI)

"NRT: Integrated Data Science (Int dS): Teams for Advancing Bioscience Discovery."
co-PI, with Tom Cech (PI; Colorado), Robin Dowell (co-PI; Colorado), Eric Vance (co-PI; Colorado)

and Manuel Lladser (co-PI; Colorado)
NSF DGE, $3,000,000   2020 – 2025

"Evaluating and Maximizing Fairness in Information Flow on Networks."
PI, with Suresh Venkatasubramanian (PI; Utah), Carlos E. Scheidegger (PI; Arizona), and Sorelle
Friedler (PI; Haverford)
NSF CISE III, $1,173,487   2020 – 2023

"A New Synthesis for the Science of Science."
PI
NSF SBE SMA Conference, $40,418   2020 – 2021

"Ovarian cancer ascites: A glimpse of therapeutic response and recurrence."
co-PI, with Kian Behbakht (PI; Anschutz), Benjamin Bitler (PI; Anschutz), Raj Kumar (co-PI;
Anschutz), Jennifer Richer (co-PI; Anschutz), Jill Slansky (co-PI; Anschutz), Matthew Sikora (co-
PI; Anschutz), Kim Jordan (co-PI; Anschutz)
Comprehensive Cancer Center Developmental Therapeutics Program Multi-PI Grant, University of
Colorado Denver, $100,000   2020

"Mapping the structure and dynamics of the scientific ecosystem."
PI, with Daniel B. Larremore (PI; Colorado), Mirta Galesic (co-PI; Santa Fe), and Jennifer Dunne
(co-PI; Santa Fe)
DoD and AFOSR, MINERVA, $2,568,889   2019 – 2022

"Leveraging machine learning to improve biological protocol accuracy."
PI, with Sara Sawyer (co-PI; Colorado)
University of Colorado, Research & Innovation Seed Grant, $50,000   2018 – 2020

"Academic hiring networks and scientific productivity across disciplines."
PI, with Daniel B. Larremore (PI; Santa Fe) and Mirta Galesic (co-PI; Santa Fe)
NSF SBE, $550,000   2016 – 2020

"CAREER: Hierarchical probabilistic models for networks with rich data in scientific domains."
PI
NSF CISE, $550,000   2015 – 2020

"Extracting diagnostic signals from human microbiome data."
PI, with Ken Krauter (co-PI; Colorado) and Matt McQueen (co-PI; Colorado)
University of Colorado, Butcher Seed Grant Award, $70,000   2014 – 2016

"High-throughput ecosystem analysis and design."
co-PI, with Rob Knight (PI; Colorado), Ryan Gill (co-PI; Colorado), Noah Fierer (co-PI; Colorado),
Manuel Lladser (co-PI; Colorado) and Robin Dowell (co-PI; Colorado)
Keck Foundation, $1,000,000   2013 – 2014

"An alignment-free network approach to analyzing highly recombinant malaria parasite antigens."
PI, with Caroline Buckee (PI; Harvard)
NIH/NIGMS, R21, $286,485   2013 – 2016

"EAGER: Understanding technological change from the map of capabilities."
co-PI, with Hyejin Youn (PI; Santa Fe Institute)
NSF SBE, $152,500   2013 – 2017

"Statistical inference for detecting structures and anomalies in networks."

	PI, with Cris Moore (PI; Santa Fe Institute) and Mark Newman (PI; Michigan)	
	DARPA and AFOSR, GRAPHS, $2,924,396	2012 – 2015
	"Measuring the structure of research university networks."	
	PI	
	Kauffman Foundation, $53,000	2012 – 2013
	"Statistical inference and machine learning for complex networks."	
	co-PI, with Cris Moore (PI; Santa Fe Institute) and Mark Newman (PI; Michigan)	
	McDonnell Foundation, $417,576	2008 – 2012

GIFTS	Facebook Inc.	2015
(UNRESTRICTED)	Microsoft Inc.	2014

INVITED TALKS
(RECENT)

- Invited Speaker, "Network Science: Statistical approaches and beyond" Invited Session, Joint Statistical Meetings, Seattle WA, 7–12 August 2021
- Keynote Speaker, Computer Science Student Conference, University of New Mexico, Albuquerque NM, 2 April 2021
- Invited Speaker, GoldLab Symposium, Boulder CO, 14–15 May 2021
- Invited Speaker, Network Science Working Group, University of Colorado Anschutz, Aurora CO, 17 February 2021
- Machine Learning Seminar, Workday Inc., Boulder CO, 17 July 2020
- Distinguished Speaker Series, Leeds School of Business, University of Colorado, Boulder CO, 28 February 2020
- Seminar, School of Computing, Informatics, and Decision Systems Engineering, Arizona State University, Tempe AZ, 30 January 2020
- Seminar, The Biodesign Institute, Arizona State University, Tempe AZ, 29 January 2020
- 126 other invited talks, since 2004

ADVISING

Postdoctoral Fellows

- Dr. Katherine Wootton	2021 – present
- Dr. Eun Lee	2020 – present
- Dr. Samuel F. Way	2017 – 2019
- Dr. Andrea Berardi	2015 – 2016
- Dr. Daniel B. Larremore	2012 – 2015
- Dr. Leto Peel	2013 – 2015

Doctoral Students (all at Colorado)

- Andrew Kavran	2016 – present
Chemistry and Biochemistry & IQ Biology; co-advised with N. Ahn	
- Nicholas LaBerge	2019 – present
Computer Science; co-advised with D. B. Larremore	
- Allison C. Morgan	2016 – present
Computer Science; NSF GRF	
- Katherine Spoon	2020 – present
Computer Science; co-advised with D. B. Larremore	
- Ian Van Buskirk	2019 – present
Computer Science; co-advised with D. B. Larremore	
- Lucy Van Kleunen	2020 – present
Computer Science; co-advised with L. Dee	
- Shimian (Sam) Zhang	2019 – present
Applied Mathematics; NSF GRF	

- Anna Broido (PhD, Applied Mathematics, and IQ Biology)   2019
  Dissertation: *Characterizing the tails of degree distributions in real-world networks*
- Amir Ghasemian (PhD, Computer Science)   2018
  Dissertation: *Limits of model selection, link prediction, and community detection*
- Nora Connor (PhD, Computer Science, and IQ Biology)   2018
  Dissertation: *Using data science to find interpretable answers for problems in ecology and political science*
- Abigail Z. Jacobs (PhD, Computer Science)   2017
  Dissertation: *Comparative, population-level analysis of social networks in organizations*
- Samuel F. Way (PhD, Computer Science, and IQ Biology)   2017
  Dissertation: *Systematic inequalities in the composition and productivity of Computer Science faculty*
- Lauren G. Shoemaker (PhD, Ecology & Evolutionary Biology, and IQ Biology, co-advised with B. Melbourne)   2017
  Dissertation: *Stabilizing and equalizing mechanisms alter community coexistence and macroevolutionary diversity patterns*
- Sears Merritt (PhD, Computer Science)   2013
  Dissertation: *Dynamics and structure in competitive social systems*

Masters Students (all at Colorado)
- Upasana Dutta (MS Computer Science)   2020 – present
- Trevor DiMartino (MS Computer Science)   2017
  Thesis: *Ratchet mechanisms in macroevolutionary processes*
- Kansuke Ikehara (MS Computer Science)   2017
  Thesis: *Structure of complex networks across domains*
- Christopher Aicher (BS/MS Applied Mathematics)   2014
  Thesis: *The weighted stochastic block model*
- Pooneh Mortazavi (MS, Computer Science)   2013
  Thesis: *Genome optimization and evolution modeling using genetic algorithm and GA-TRMR*
- Yogesh Virkar (MS, Computer Science)   2012
  Thesis: *Power-law distributions and binned empirical data*

Undergraduate Students
- Skylar Martin (BS Computer Science, Colorado)   2020 – present
- Nicholas Cordaro (BS Biochemistry, Colorado)   2019 – 2020
- Christoph Uhl (BS Computer Science, Colorado)   2018 – 2020
- Alexander Ray (BS Computer Science, Colorado)   2017 – 2019
  Thesis: *Scaling laws in empirical networks*
- McKenzie Weller (BS Computer Science, Colorado)   2016 – 2019
- Tetsumichi Umada (BS Computer Science, Colorado)   2016 – 2018
- Ellen Tucker (BS Mathematics, Colorado)   2015 – 2016
- Matthias Sainz (BS Computer Science, Colorado)   2014 – 2016
- Dominic Tonozzi (BS Computer Sciene, Colorado)   2014 – 2015
- Christopher Aicher (BS/MS Applied Mathematics, Colorado)   2011 – 2014
- Kenneth Sheedlo (BS Comp. Sci., Colorado; Discovery Learning Apprentice)   2011 – 2012
- Andrew Zizzi (BS Aerospace, Colorado; Discovery Learning Apprentice)   2011 – 2012
- Kristen Hargett (BS Applied Math., Colorado)   2011
- Zachary Newman (BS Math., Colorado; McNair Scholar & UROP)   Summer 2011
- Abigail Jacobs (BS Math., Northwestern; REU)   Summer 2010
- Amy Wesolowski (BS Math., C.o. Atlantic; REU)   Summer 2010
- Benjamin Good (BS Physics, Swarthmore; REU)   2008 – 2010

High School Students
- Preston Dunton (Legacy High School, CO)   Fall 2017

• Arnab Purkayastha (Fairview High School, CO)	Spring 2014
• Andrew Mauboussin (Darien High School, CT)	Summer 2009

TEACHING

University Courses (* indicates a new course)
- Biological Networks* (undergraduate)   Fall 2019, Spring 2020 – 2021
  Colorado, CSCI 3352
- Topics in Interdisciplinary Research* (graduate, co-taught with D. Larremore) Fall 2019 – 2020
  Colorado, CSCI 7000
- Algorithms (undergraduate)   Spring 2014, 2017 – 2018
  Colorado, CSCI 3104
- History and Future of Computing* (undergraduate)   Spring 2015 – 2016
  Colorado, CSCI 4380
- Network Analysis and Modeling* (graduate)   Fall 2013 – 2014, 2016 – 2017
  Colorado, CSCI 5352
- Design and Analysis of Algorithms (graduate)   Spring 2011 – 2013
  Colorado, CSCI 5454
- Inference, Models and Simulation for Complex Systems* (graduate)   Fall 2010 – 2011
  Colorado, CSCI 7000

Summer Schools
- Faculty, Santa Fe Institute, "Complex Systems Summer School" (CSSS)   2007 – 2019
  Santa Fe NM, 2007–2008, 2013–2014, 2016–2019; Beijing China, 2008–2009; Ajitgarh India 2015
- Faculty, Santa Fe Institute, "Short Course on Exploring Complexity"   2011 – 2016
  Albuquerque NM, 2011; Washington DC, 2012; Stanford CA, 2012; Austin TX, 2013; Santa Fe
  NM, 2015; Santa Fe NM, 2016
- Faculty, Summer Institute in Computational Social Science (SICSS)   2018
  Boulder CO, 2018

REFEREE WORK

- **Applied Math and Statistics**: Annals of Applied Statistics, EPJ Data Science, SIAM ICDM Workshop on Analysis of Dynamic Networks (2009), Statistical Analysis and Data Mining
- **Biology**: Bioinformatics, BMC Bioinformatics, Evolutionary Biology, Global Ecology and Biogeography, IET Systems Biology, Journal of Animal Ecology, Journal of Theoretical Biology, Marine Ecology Progress Series, Methods in Ecology and Evolution, PLOS Biology, PLOS Computational Biology, Trends in Ecology & Evolution
- **Computer Science**: AAAI (2014), Communications of the ACM (CACM), Computer Science Reviews (CSR), Foundations and Trends in Machine Learning, IEEE GLOBECOM (2010), Proceedings of the IEEE, IEEE International Conference on Robotics and Automation (2006), ICWSM (2014–2017), Journal of the ACM (JACM), ACM Journal of Experimental Algorithmics (JEA), SIAM Network Science (2017–2018, 2020), Journal of Statistical Analysis and Data Mining, Machine Learning, ACM Trans. on Knowledge Discovery from Data (TKDD), IEEE Trans. on Knowledge and Data Engineering (TKDE), MLG (2016–2018, 2020), IEEE Trans. on Network Science and Engineering (TNSE), ACM Trans. on the Web (TWEB), RANDOM (2007), SIMPLEX (2010), SODA (2006, 2007), SDM Workshop on Analysis of Dynamic Networks (2009), NIPS Workshop on Analyzing Graphs (2008), Workshop on Experimental Algorithms (2006), ACM SIGKDD Workshop on Social Network Mining and Analysis (2008, 2009), WSDM (2010), WWW (2010–2018)
- **General**: Nature, Nature Communications, Nature Methods, PLOS ONE, PNAS, Science, Science Advances
- **Physics**: European Physical Journal B, Europhysics Letters, Journal of Statistical Mechanics, New Journal of Physics, Physica A, Physical Review E, Physical Review Letters
- **Political Science**: American Journal of Political Science, American Political Science Review, British Journal of Political Science, Defense & Peace Economics, Journal of Conflict Resolution, Journal of Peace Research

- **Others**: Advances in Complex Systems, Computational Linguistics, Hydrology Earth System Sciences, Journal of Chemical Information and Modeling, Journal of Complex Networks, Journal of Quantitative Criminology, Networks and Spatial Economics, The Social Science Journal
- **Funding Agencies**: U.S. National Science Foundation (NSF), U.S. Department of Energy (DOE), U.S. Army Research Office (ARO), ETH Zürich Research Commission, European Research Council (ERC), Computing Research Association (CRA) Computing Innovation Fellows (CIFellows) 2020

PROFESSIONAL SERVICE

Workshops (Organizer or co-organizer)

- *A New Synthesis for the Science of Science*
  Santa Fe Institute, Santa Fe NM (TBD)   2021
  With D. B. Larremore (Colorado) and M. Galesic (Santa Fe)
- *Statistical Inference for Network Models*
  NetSci 2020, Satellite Workshop, Rome Italy (20 September)   2020
  With D. B. Larremore (Colorado), B. Fosdick (Colo. State), T. Eliassi-Rad (Northeastern), and T. P. Peixoto (Cent. Eur. U.)
- *Statistical Inference for Network Models*
  NetSci 2019, Satellite Workshop, Burlington VT (27 May)   2019
  With D. B. Larremore (Colorado), B. Fosdick (Colo. State), and T. Eliassi-Rad (Northeastern)
- *Statistical Inference for Network Models*
  NetSci 2018, Satellite Workshop, Paris France (11 June)   2018
  With D. B. Larremore (Colorado), B. Fosdick (Colo. State), and T. Eliassi-Rad (Northeastern)
- *Statistical Inference for Network Models*
  NetSci 2017, Satellite Workshop, Indianapolis IN (19 June)   2017
  With D. B. Larremore (Santa Fe), B. Fosdick (Colo. State), and T. Broderick (MIT)
- *Violent Radicalization in Western Democracies*
  Santa Fe Institute, Santa Fe NM (1–4 March)   2017
  With M. Galesic (Santa Fe), M. Dumas (Santa Fe), and D. Pines (UC Davis)
- *Statistical Inference for Network Models*
  NetSci 2016, Satellite Workshop, Seoul Korea (30 May)   2016
  With D. B. Larremore (Santa Fe), B. Fosdick (Colo. State), and A. Z. Jacobs (Colorado)
- *Inference on Networks: Algorithms, Phase Transitions, New Models and New Data*
  Santa Fe Institute, Santa Fe NM (14–18 December)   2015
  With C. Moore (SFI) and M.E.J. Newman (Michigan)
- *Networks in the Social and Information Sciences*
  NIPS 2015, Montreal Canada (12 December)   2015
  With E. Airoldi (Harvard), D. Choi (CMU), J. Ugander (Microsoft), and P. Toulis (Harvard)
- *Statistical Inference for Network Models*
  NetSci 2015, Satellite Workshop, Zaragoza Spain (1 June)   2015
  With D. B. Larremore (Harvard), L. Peel (Colorado), and A. Z. Jacobs (Colorado)
- *Networks: From Graphs to Rich Data*
  NIPS 2014, Montreal Canada (13 December)   2014
  With E. Airoldi (Harvard), D. Choi (CMU), J. Ugander (Microsoft), and L. Peel (Colorado)
- *Mathematics Research Community Workshop on Network Science*
  Snowbird UT (24–30 June)   2014
  With M. A. Porter (Oxford) and D. Kempe (Southern Cal.)
- *Statistical Inference for Network Models*
  NetSci 2014, Satellite Workshop, Berkeley CA (2 June)   2014
  With D. B. Larremore (Harvard), L. Peel (Colorado), and A. Z. Jacobs (Colorado)
- *Frontiers of Network Analysis: Methods, Models, and Applications*
  NIPS 2013, Lake Tahoe NV (9 December)   2013
  With E. Airoldi (Harvard), D. Choi (CMU), K. El-Arini (Facebook), and J. Leskovec (Stanford)
- *Structure, Statistical Inference, and Dynamics in Networks: From Graphs to Rich Data*
  Santa Fe Institute, Santa Fe NM (6–9 May)   2013

With C. Moore (SFI) and M.E.J. Newman (Michigan)
- *The Mathematics of Terrorism*
  Santa Fe Institute, Santa Fe NM (31 Aug.–2 Sept)   2009
  With B. Tivnan (MITRE)
- *Statistical Inference for Complex Networks*
  Santa Fe Institute, Santa Fe NM (3–5 December)   2008
  With C. Moore (New Mexico, SFI)
- *Navigability and Complex Networks*
  Santa Fe Institute, Santa Fe NM (4–6 August)   2008
  With D. Krioukov (UCSD) and kc claffy (UCSD)
- *Is There a Physics of Society?*
  Santa Fe Institute, Santa Fe NM (10–12 Januarry)   2008
  With M. Girvan (Maryland)

Conferences (Organizer or co-organizer)
- 2nd *Computer Science at UNM Student Research Conference*, Conference Chair,
  Albuquerque NM, (3 March)   2006
- 1st *Computer Science at UNM Student Research Conference*, Conference Chair,
  Albuquerque NM, (4 March)   2005

Program Committees
- *International Conference on Computational Social Science* (IC2S2)   2016 – 2018
- *International Conference on Network Science* (NetSci, main cycle)   2015 – 2018, 2020
- *World Wide Web Conference* (WWW)   2010 – 2018
- *SIAM Workshop on Network Science*   2013, 2017 – 2018, 2020
- (PC co-chair) *International Conference on Computational Social Science* (IC2S2)   2017
- (Senior PC) *International Conference on Network Science* (NetSci, main cycle)   2017
- (Senior PC) *World Wide Web Conference* (WWW)   2017
- *International Conference on Network Science* (NetSci-X)   2015 – 2017
- *International Workshop on Mining and Learning With Graphs* (MLG)   2016 – 2017
- *International AAAI Conference on Web and Social Media* (ICWSM)   2014 – 2017
- (Senior PC) *International Conference on Computational Social Science* (IC2S2)   2016
- *AAAI Conference on Artificial Intelligence* (AAAI)   2014
- *International Conference on Complex Networks* (CompleNet)   2009 – 2010
- *Workshop on Simplifying Complex Networks for Practitioners* (SIMPLEX)   2010
- *ACM International Conference on Web Search and Data Mining* (WSDM)   2010
- *Workshop on Social Network Mining and Analysis* (at ACM SIGKDD)   2008 – 2009
- *Workshop on Analysis of Dynamic Networks* (at SIAM ICDM)   2009
- *Workshop on Analyzing Graphs: Theory and Applications* (at NIPS)   2008
- *International Workshop on Experimental Algorithms*   2006

Institutional Committees & Service
- Colorado, Provost's Faculty Achievement Award Committee   2020 – 2021
- Colorado, BioFrontiers Institute, Council   2010 – present
- Colorado, BioFrontiers Institute, Computing Committee   2015 – present
- Colorado, Computational Biology Minor, Director   2018 – present
- Colorado, Computer Science, Teaching Circle Committee (co-chair)   2019 – present
- Colorado, Interdisciplinary Quant. Biology (IQBio) Curriculum Committee   2017 – present
- Colorado, Interdisciplinary Quant. Biology (IQBio) liaison with CS   2010 – present
- Colorado, Computer Science, CRA CERP point-of-contact   2016 – present
- Colorado, BioFrontiers Faculty Search Committee (co-chair)   2016 – 2017
- Colorado, Computer Science, Faculty Search Committee   2012 – 2016
- Colorado, BioFrontiers Faculty Search Committee (co-chair)   2014 – 2015
- Colorado, Computer Science, Executive Committee   2013 – 2015

- Colorado, Computer Science, Graduate Committee   2010 – 2012
- Colorado, Interdisciplinary Quant. Biology (IQBio) Mentoring Committee   2011 – 2012
- Santa Fe Institute, Colloquium Committee   2007 – 2009

Society Leadership Positions
- Co-founder and Administrator, Zachary Karate Club CLUB Prize in Network Science
  `http://networkkarate.tumblr.com`   2013 – present
- Erdős-Rényi Prize selection committee, Network Science Society   2020
- President, UNM Computer Science Grad. Student Assoc. (CSGSA)   2004 – 2005
- Vice President, UNM Computer Science Grad. Student Assoc. (CSGSA)   2003 – 2004

Professional Society Memberships (current)
- American Associate for the Advancement of Science (AAAS)
- Network Science Society
- Sigma Xi (Full Member)

SYNERGISTIC
ACTIVITIES
- Founder and project lead for *Colorado Index of Complex Networks* (ICON)   2016 – present
  - `https://icon.colorado.edu`
  - public index of >5407 publicly accessible network science data sets
- Science blogger at *Structure+Strangeness*   2005 – present
  - `https://aaronclauset.github.io`   2017 – present
  - 4 entries
  - `http://structureandstrangeness.com`   2005 – 2016
  - 366 entries and >500,000 page hits
- Science microblogger on Twitter `@aaronclauset`   2012 – present
  - 8125 followers (top 1% of all users)
  - 2257 tweets with mean 3.4 retweets per tweet (top 4% of all users)
- Popular science writing, for *Pacific Standard*, *Slate*, and *CSM*   2014 – 2017
- Wikipedia contributor (various science and mathematics articles)   2006 – present
- Stackexchange contributor (various CS and mathematics questions)   2011 – present
- Public release of scientific data sets (open source; typically GPL or CC)   2007 – present
  - LinkPrediction network corpus (with A. Ghasemian, H. Hosseinmardi)   2019
  - Parental leave policies, U.S. & Canada (with A.C. Morgan, S.F. Way, D.B. Larremore) 2018
  - CommunityFitNet network corpus (with A. Ghasemian, H. Hosseinmardi)   2018
  - Degree sequences for 927 complex networks (with A.D. Broido)   2018
  - Faculty hiring networks for computer science, business, and history   2015
  - NFL 2009 network (with C. Aicher)   2014
  - Terrorist event sizes worldwide   2013
  - Body masses of all extant whale species   2013
  - Various binned quantities with heavy-tailed distributions (with Y. Virkar)   2012
  - 9/11 hijackers association network   2008
  - Various quantities with heavy-tailed distributions (with M.E.J. Newman)   2007
- Public release of working algorithms (open source; typically GPL or CC)   2004 – present
  - stacked topological model for link prediction in networks (Python; with A. Ghasemian) 2019
  - neoSBM for metadata community detection (Python; with L. Peel)   2017
  - Block entropy statistical test (BESTest) for networks (Matlab; with D.B. Larremore) 2017
  - Minimum violation ranking sampling code (Matlab)   2015
  - Bipartite stochastic block model package (Matlab; with D.B. Larremore)   2014
  - Network change-point detection package (C++ and Python; with L. Peel)   2014
  - Weighted stochastic block model package (Matlab; with C. Aicher)   2014
  - Power-law distributions with bins toolkit (Matlab; with Y. Virkar)   2012
  - Rare event forecasting tool kit (Matlab)   2012
  - Terrorist organization simulation code (Matlab)   2011
  - Modularity landscape mapping software package (Python; with B.H. Good)   2010

- Hierarchical random graph and missing-link prediction software package (C++) 2008
- Species mass macroevolution simulation code (Matlab) 2008
- Power-law distributions tool kit (Matlab and R; with C.R. Shalizi) 2007
- Local-modularity network clustering algorithm (C++) 2005
- Fast-modularity network clustering algorithm (C++) 2004