Aaron Clauset

CONTACT INFORMATION	Department of Computer Science University of Colorado at Boulder 430 UCB Boulder CO, 80309-0430 USA	<pre>voice: 303-492-6643 fax: 303-492-2844 email: aaron.clauset@colorado.edu web: aaronclauset.github.io</pre>	
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 Mexic B.S. Physics, Haverford College (with honors and		
ACADEMIC POSITIONS	Associate Professor, Computer Science Dept., Uni Core Faculty, BioFrontiers Institute, University of External Faculty, Santa Fe Institute Affiliated Faculty, Ecology & Evo. Biology Dept., Affiliated Faculty, Applied Mathematics Dept., University of Assistant Professor, Computer Science Dept., University of Omidyar Fellow, Santa Fe Institute	$Colorado,\ Boulder$ 2010 – present 2012 – present $University\ of\ Colorado,\ Boulder$ 2011 – present 2011 – present 2012 – present 2012 – present 2015 –	
EDITORIAL POSITIONS	Deputy Editor, Science Advances, AAAS Associate Editor, Science Advances, AAAS Associate Editor, Journal of Complex Networks, C	$\begin{array}{c} 2017 - \text{present} \\ 2014 - 2017 \\ \text{Oxford University Press} \\ \end{array}$	
Honors & Awards (Selected)	Provost Faculty Achievement Award, U. Colorado Top 20 Teachers, College of Engineering, U. Colora Erdős-Rényi Prize in Network Science NSF CAREER Award Kavli Fellow Santa Fe Institute Public Lecturer (http://bit.1 Graduation Speaker, U. New Mexico School of Engoutstanding Graduate Student Award, U. New Mexico School	2016 2016 2016 2015 2014 2010 2010 2010 2006	
GOOGLE SCHOLAR	scholar.google.com/citations?user=e7VI_HcA	AAAJ	
	* indicates an undergraduate coauthor; ° indicates	equal contribution	
Manuscripts Under Review	N. J. Cordaro, A. J. Kavran, M. Smallegan, M. Palacio, N. Lammer, T. S. Brant, V. DuMont, N. Doherty Garcia, S. Miller, T. Jourabchi, S. L. Sawyer, and A. Clauset, "Optimizing polymerase chain reaction (PCR) using machine learning." Submitted (2021). (Preprint at biorxiv.org/content/10.1101/2021.08.12.455589v1.full) A. C. Morgan, N. LaBerge, D. B. Larremore, M. Galesic, and A. Clauset, "Socioeconomic roots of academic faculty." Submitted (2021). (Preprint at osf.io/preprints/socarxiv/6wjxc)		
Publications (Refereed)	E. Lee, A. Clauset °, and D. B. Larremore°, "The <i>Science</i> 10 , 48 (2021). (Preprint at arxiv:2105.0		

- H. Hosseinmardi, A. Ghasemian, A. Clauset, M. Mobiush, D. M. Rothschild, and D. J. Watts, "Examining the consumption of radical content on YouTube." *Proc. Natl. Acad. Sci. USA* 118(32), e2101967118 (2021). (Preprint at arxiv:2011.12843)
- A. J. Kavran and A. Clauset, "Denoising large scale molecular profiling data using network filters." *BMC Bioinformatics* **22**, article 157 (2021). (Preprint at doi.org/10.1101/2020.03.12.989244)
- 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." *Science Advances* **7**(9), eabd1996 (2021). [Paper of the Year Award, 2021, International Society for Scientometrics and Informetrics (ISSI)]
- 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 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 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)

- 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: Substi-

- tution 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 algorithms 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. Glasemian, 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).

Essays and Perspectives

- **A.** Clauset, K. Behbakht, B. G. Bitler, "Decoding the dynamic tumor microenvironment." To appear, *Science Advances* **7**(23), eabi5904 (2021).
- **A.** Clauset, D. B. Larremore and R. Sinatra, "Data-driven predictions in the science of science." *Science* **355**, 477–480 (2017). [Invited]

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).

PREPRINTS AND OTHER PUBLICATIONS

- U. Dutta and A. Clauset, "Convergence criteria for sampling random graphs with specified degree sequences." Preprint at arxiv:2105.12120 (2021).
- 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).
- 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, dx.doi.org/10.1101/092866 (2016).
- L. Fortunato and A. Clauset, "Revisiting the effect of red on competition in humans." Preprint, 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).
- 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). https://go.nature.com/3mYkXfq
- **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/21FB1Go (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, https://bit.ly/3FRm4Gd (2015).

J. Warner and A. Clauset, "What same-sex marriage means for the future of recreational weed." <i>Pacific Standard</i> , published online 24 October, http://bit.ly/1tdlut1 (2014).	
A. C. Morgan, S. F. Way, and A. Clauset , "System and methods for crawling well parsing relevant information stored in web pages." U.S. Patent Application 202002935 62/593,804 (2020).	
Scientific & Technical Consultant, <i>Institute for Defense Analysis</i> , Alexandria VA Corporate Advisory Board, <i>33across LLC</i> , New York NY	$\begin{array}{c} 2017 \\ 2015 - 2017 \\ 2010 - 2014 \\ 2008 - 2012 \\ 2007 - 2012 \\ 2005 \end{array}$
"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-P and Manuel Lladser (co-PI; Colorado) NSF DGE, \$3,000,000	T; Colorado) $2020 - 2025$
"Evaluating and Maximizing Fairness in Information Flow on Networks." PI, with Suresh Venkatasubramanian (PI; Utah), Carlos E. Scheidegger (PI; Arizona), Friedler (PI; Haverford)	
"A New Synthesis for the Science of Science." PI NSF SBE SMA Conference, \$40,418	2020 - 2022
"Ovarian cancer ascites: A glimpse of therapeutic response and recurrence." co-PI, with Kian Behbakht (PI; Anschutz), Benjamin Bitler (PI; Anschutz), Raj Ku Anschutz), Jennifer Richer (co-PI; Anschutz), Jill Slansky (co-PI; Anschutz), Matthew PI; Anschutz), Kim Jordan (co-PI; Anschutz) Comprehensive Cancer Center Developmental Therapeutics Program Multi-PI Grant, U Colorado Denver, \$100,000	umar (co-PI; v Sikora (co-
"Mapping the structure and dynamics of the scientific ecosystem." PI, with Daniel B. Larremore (PI; Colorado), Mirta Galesic (co-PI; Santa Fe), and Jen (co-PI; Santa Fe) DoD and AFOSR, MINERVA, \$2,568,889	anifer Dunne 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."

NSF CISE, \$550,000 2015 - 2020

PATENTS

Industry Consulting

Grants (PI or co-PI)

[&]quot;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

(UNRESTRICTED)

Facebook Inc. Microsoft Inc. 2015

2014

INVITED TALKS (RECENT)

- Invited Speaker, Center for Theoretical and Evolutionary Genetics, University of California, Berkeley CA, 5 November 2021
- Invited Speaker, Department of Statistics, University of Wisconsin, Madison WI, 20 October 2021
- Invited Speaker, Institute for Cognitive Science, University of Colorado, Boulder CO, 18 October 2021
- Invited Speaker, International Roundtable on Computational Social Science, Institute for Analytical Sociology (IAS), Norrköping, Sweden, 14 October 2021
- Colloquium, Department of Integrated Physiology, University of Colorado, Boulder CO, 11 October 2021
- Seminar, Department of Information Science, University of Colorado, Boulder CO, 22 September 2021
- Invited Speaker, Data Science/Computational Social Science Seminar, University of Michigan, Ann Arbor MI, 9 September 2021
- Invited Speaker, University of Vermont, Burlington VT, 3 September 2021
- Invited Speaker, "Network Science: Statistical approaches and beyond" Invited Session, Joint Statistical Meetings, Seattle WA, 7–12 August 2021
- Invited Speaker, Complexity Interactive, Santa Fe Institute, Santa Fe NM, 14 June 2021
- Invited Speaker, GoldLab Symposium, Boulder CO, 14–15 May 2021
- Invited Speaker, Mothers In Science Conference, 5 May 2021
- Keynote Speaker, Computer Science Student Conference, University of New Mexico, Albuquerque NM, 31 March 2021

- Invited Speaker, Centro de Ciencias de la Complejidad, Universidad Nacional Autónoma de México, Mexico City, Mexico, 12 March 2021
- Invited Speaker, Network Science Working Group, University of Colorado Anschutz, Aurora CO, 17 February 2021
- 130 other invited talks, since 2004

present
$-2019 \\ -2016 \\ -2015 \\ -2015$
present

- Caroline Wendt 2021 present Computer Science
 Shimian (Sam) Zhang 2019 present
- Shimian (Sam) Zhang
 Applied Mathematics; NSF GRF
- Andrew J. Kavran (PhD Biochemistry, and IQ Biology, co-advised with N. Ahn)
 Dissertation: Intermittent drug treatment of BRAF^{V600E} melanoma cells delays resistance by adaptive resensitization to drug rechallenge
- Allison C. Morgan (PhD Computer Science)
 Dissertation: Quantifying structural inequalities in the academic workforce
- Anna Broido (PhD Applied Mathematics, and IQ Biology)

 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)

 Dissertation: Using data science to find interpretable answers for problems in ecology and political
- scienceAbigail 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)
 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)
 Dissertation: Stabilizing and equalizing mechanisms alter community coexistence and macroevolutionary diversity patterns
- Sears Merritt (PhD Computer Science)

 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	2017
• Christopher Aicher (BS/MS Applied Mathematics)	2014
Thesis: The weighted stochastic block model	2011
• Pooneh Mortazavi (MS, Computer Science)	2013
Thesis: Genome optimization and evolution modeling using geneta	$ic \ algorithm \ and \ GA-TRMR$
• Yogesh Virkar (MS, Computer Science)	2012
Thesis: Power-law distributions and binned empirical data	
Undergraduate Students	
• Skylar Martin (BS Computer Science, Colorado)	2020 - 2021
Thesis: PhageOne: Inferring the grammar of bacteriophage genon	nes
• 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	2014 2010
• McKenzie Weller (BS Computer Science, Colorado)	2016 - 2019
 Tetsumichi Umada (BS Computer Science, Colorado) Ellen Tucker (BS Mathematics, Colorado) 	$\begin{array}{c} 2016 - 2018 \\ 2015 - 2016 \end{array}$
 Matthias Sainz (BS Computer Science, Colorado) 	2013 - 2010 $2014 - 2016$
Dominic Tonozzi (BS Computer Sciene, Colorado)	2014 - 2010 $2014 - 2015$
• Christopher Aicher (BS/MS Applied Mathematics, Colorado)	2011 - 2014
• Kenneth Sheedlo (BS Comp. Sci., Colorado; Discovery Learning A	
• Andrew Zizzi (BS Aerospace, Colorado; Discovery Learning Appr	
• Kristen Hargett (BS Applied Math., Colorado)	2011
• Zachary Newman (BS Math., Colorado; McNair Scholar & UROF	•
• 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
University Courses (* indicates a new course)	
• Biological Networks* (undergraduate) Colorado, CSCI 3352	Fall 2019, Spring 2020 – 2022
	11 2013, 2014, 2016, 2017, 2021
Colorado, CSCI 5352	11 2010, 2014, 2010, 2011, 2021
• Inference, Models and Simulation for Complex Systems* (graduat	Fall 2010, 2011
Colorado, CSCI 7000	,
• Algorithms (undergraduate)	Spring 2014, 2017, 2018
Colorado, CSCI 3104	Q
History and Future of Computing* (undergraduate) Coloredo, CSCI 4280	Spring 2015, 2016
Colorado, CSCI 4380 • Design and Analysis of Algorithms (graduate)	Spring 2011 – 2013
Colorado, CSCI 5454	5pring 2011 – 2013
• Topics in Interdisciplinary Research* (graduate, co-taught with D). Larremore) Fall 2019 – 2021

Teaching

Summer Schools

- Faculty, Philosophy & Political Economy Graduate Summer Workshop, Chapman U. 2021 2021
- Faculty, Santa Fe Institute, Complexity Interactive
- Faculty, Santa Fe Institute, Complex Systems Summer School (CSSS) 2007 - 2019Santa Fe NM, 2007–2008, 2013–2014, 2016–2019; Beijing China, 2008–2009; Ajitgarh India 2015
- Faculty, Summer Institute in Computational Social Science (SICSS), Boulder CO 2018
- Faculty, Santa Fe Institute, Short Course on Exploring Complexity 2011 - 2016Albuquerque NM, 2011; Washington DC, 2012; Stanford CA, 2012; Austin TX, 2013; Santa Fe NM, 2015; Santa Fe NM, 2016

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), SIM-PLEX (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, 2021)

Professional SERVICE

Workshops (Organizer or co-organizer)

• A New Synthesis for the Science of Science Santa Fe Institute, Santa Fe NM (TBD) With D. B. Larremore (Colorado) and M. Galesic (Santa Fe)

2022

- Fairness in Networks
 - Internat. Conf. on Knowledge Discovery and Data Mining (KDD) (14–18 September) 2021 With S. Friedler (Haverford), C. Scheidegger (Arizona), and S. Venkatasubramanian (Brown)
- 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 (Northeas	tern)
•	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 (Northeas	tern)
•	Statistical Inference for Network Models Net Sci 2017, Set allita Worlsham Indiananclis IN (10 June)	2017
	NetSci 2017, Satellite Workshop, Indianapolis IN (19 June) With D. B. Larremore (Santa Fe), B. Fosdick (Colo. State), and T. Broderick (MIT)	2017
_	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)	2011
•	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)	rd)
•	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	2014
	NIPS 2014, Montreal Canada (13 December) With F. Aireldi (Harrand), D. Chei (CMI), I. Heander (Microsoft), and I. Peel (Colored	2014
_	With E. Airoldi (Harvard), D. Choi (CMU), J. Ugander (Microsoft), and L. Peel (Colorad Mathematics Research Community Workshop on Network Science	.0)
•	Snowbird UT (24–30 June)	2014
	With M. A. Porter (Oxford) and D. Kempe (Southern Cal.)	2014
•	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 (Star	nford)
•	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	2006
	Santa Fe Institute, Santa Fe NM (3–5 December) With C. Moore (New Mexico, SFI)	2008
_	Navigability and Complex Networks	
•	Santa Fe Institute, Santa Fe NM (4–6 August)	2008
	With D. Krioukov (UCSD) and kc claffy (UCSD)	2000
•	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)	
• 2 nd Computer Science at UNM Student Research Conference, Conference Chair	ir,
Albuquerque NM, (3 March)	2006
• 1 st Computer Science at UNM Student Research Conference, Conference Chair	r,
Albuquerque NM, (4 March)	2005
Program Committees	
• International Conference on Computational Social Science (IC2S2)	2016 - 2018
•	2015 - 2018, 2020
World Wide Web Conference (WWW)	2010 - 2018
1	2017 - 2018, 2020
• (PC co-chair) International Conference on Computational Social Science (IC2)	,
• (Senior PC) International Conference on Network Science (NetSci, main cycle	,
• (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) International AAAI Conference on Web and Social Media (ICWSM) 	2016 - 2017
• (Senior PC) International Conference on Computational Social Science (IC2S2	2014 - 2017 2016
• (Semiol FC) International Conference on Computational Social Science (10232) • AAAI Conference on Artificial Intelligence (AAAI)	2010
• International Conference on Complex Networks (CompleNet)	2009 - 2010
• Workshop on Simplifying Complex Networks for Practitioners (SIMPLEX)	2009 - 2010 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
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Institutional Committees & Service	
institutional committees & Service	
• Colorado, BioFrontiers Institute, Council	2010 – present
	2010 – present 2018 – present
• Colorado, BioFrontiers Institute, Council	_
 Colorado, BioFrontiers Institute, Council Colorado, Computational Biology Minor, Director Colorado, Computer Science, Teaching Circles, Director Colorado, Computer Science, Executive Committee 	2018 – present
 Colorado, BioFrontiers Institute, Council Colorado, Computational Biology Minor, Director Colorado, Computer Science, Teaching Circles, Director Colorado, Computer Science, Executive Committee Colorado, BioFrontiers Institute, Computing Committee 	2018 – present 2019 – present
 Colorado, BioFrontiers Institute, Council Colorado, Computational Biology Minor, Director Colorado, Computer Science, Teaching Circles, Director Colorado, Computer Science, Executive Committee Colorado, BioFrontiers Institute, Computing Committee Colorado, Interdisciplinary Quant. Biology (IQBio) Curriculum Committee 	2018 - present 2019 - present 2021 - present 2015 - present 2017 - present
 Colorado, BioFrontiers Institute, Council Colorado, Computational Biology Minor, Director Colorado, Computer Science, Teaching Circles, Director Colorado, Computer Science, Executive Committee Colorado, BioFrontiers Institute, Computing Committee Colorado, Interdisciplinary Quant. Biology (IQBio) Curriculum Committee Colorado, Interdisciplinary Quant. Biology (IQBio) liaison with CS 	2018 - present 2019 - present 2021 - present 2015 - present 2017 - present 2010 - present
 Colorado, BioFrontiers Institute, Council Colorado, Computational Biology Minor, Director Colorado, Computer Science, Teaching Circles, Director Colorado, Computer Science, Executive Committee Colorado, BioFrontiers Institute, Computing Committee Colorado, Interdisciplinary Quant. Biology (IQBio) Curriculum Committee Colorado, Interdisciplinary Quant. Biology (IQBio) liaison with CS Colorado, Computer Science, CRA CERP point-of-contact 	2018 - present 2019 - present 2021 - present 2015 - present 2017 - present 2010 - present 2016 - present
 Colorado, BioFrontiers Institute, Council Colorado, Computational Biology Minor, Director Colorado, Computer Science, Teaching Circles, Director Colorado, Computer Science, Executive Committee Colorado, BioFrontiers Institute, Computing Committee Colorado, Interdisciplinary Quant. Biology (IQBio) Curriculum Committee Colorado, Interdisciplinary Quant. Biology (IQBio) liaison with CS Colorado, Computer Science, CRA CERP point-of-contact Colorado, Provost's Faculty Achievement Award Committee 	2018 - present 2019 - present 2021 - present 2015 - present 2017 - present 2010 - present 2016 - present 2020 - 2021
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Professional Society Memberships (current)
American Association for the Advancement of Science (AAAS)

- \bullet International Society for Scientometrics and Informetrics (ISSI)
- Complex Systems Society (CSS)
- Network Science Society
- Sigma Xi (Full Member)

Synergistic Activities

• Sigma Xi (Full Member)	
• Founder and project lead for Colorado Index of Complex Networks (ICON) - icon.colorado.edu - icon.colorado.edu	esent
- public index of >5407 publicly accessible network science data sets	
• Science blogger at Structure+Strangeness 2005 – pre	
- aaronclauset.github.io 2017 - pre	sent
- 4 entries	2010
- structureandstrangeness.com (defunct) 2005 - 2	2016
- 366 entries and >500,000 page hits	
• Science microblogger on Twitter @aaronclauset 2012 - pre	sent
- 9601 followers (top 1% of all users)	
- 2485 tweets with mean 3.4 retweets per tweet (top 4% of all users)	
– proud to be blocked by Steven Pinker since at least 2021	
• Popular science writing 2014 – 2	2017
Pacific Standard, Slate, Christian Science Monitor, and Chronicle of Higher Education	
• Wikipedia contributor (various science and mathematics articles) 2006 – pre	
• Stackexchange contributor (various CS and mathematics questions) 2011 – pre	
• Public release of scientific data sets (open source; typically GPL or CC) 2007 – pre	
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• Public release of working algorithms (open source; typically GPL or CC) 2004 – pre	
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- Fast-modularity network clustering algorithm (C++)	2004