Citation Evidence Report

EB-1B Petition — Outstanding Professor or Researcher

8 CFR § 204.5(i)(3) · Authorship + Original Contributions

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Google Scholar profile

Generated 2026-05-21 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to the 8 CFR § 204.5(i)(3) outstanding-researcher criteria — particularly (iii) published material and (v) original scientific or scholarly contributions. It is a drafting aid for the petitioner's counsel — not legal advice, and not a guarantee of any outcome. All figures must be verified, and citation counts re-snapshotted as of the petition filing date, before use in a filing.

A. Overview & Filtering Statement

50	50	5	5
Citing papers mapped	Citation edges	Home papers mapped	h-index (GS)

Filtering statement — methodology & limits

Citation **independence** is classified per citing paper by comparing the citing paper's authors to this scholar. *Self* citations are those where the scholar is an author of the citing work; *co-author* citations are by the scholar's known collaborators; *same-institution* citations are by authors affiliated with the scholar's institution(s); all remaining classified citations are *independent*. Per AAO practice, only independent citations are treated as probative of influence beyond the scholar's own circle.

Known limitations — counsel must verify. (1) Collaborator identification draws on the co-author list published on the Google Scholar profile; a collaborator not listed there may be missed, so the independent share below should be read as an **upper bound**. (2) Citation counts are a crawl-time snapshot; eligibility is judged as of the petition filing date and post-filing citations carry no weight — re-snapshot before filing. (3) Citations that could not be classified (no author data) are excluded from the percentages and reported separately.

B. Citation Independence

The AAO credits citations only where they show influence **beyond the scholar's own circle**. Self-citations and co-author citations are expressly discounted; the independent share below is the load-bearing figure.

94.0% independent of 50 classified citing papers

Citation type	Count
Independent	47
Self-citation	0
Co-author	3
Same-institution	0

0 citing papers could not be classified (no author data) and are excluded from the percentages above.

C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total — the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing — how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner's choice of comparison field.

Contribution 1

Claim — Contribution 1

The researcher challenged the ubiquity of scale-free networks, providing critical empirical evidence that such structures are rare in real-world systems.

CLAIM: The researcher's seminal contribution is the demonstration that scale-free networks are rare, as established in their 2019 Nature Communications paper. This work serves as the foundational claim for this line of research, standing alone without follow-up publications by the same author.

ORIGINALITY: The title suggests a direct challenge to prevailing assumptions in network science regarding the prevalence of scale-free topologies. By asserting rarity, the researcher appears to address a significant gap in empirical validation, offering a corrective perspective to the field's theoretical expectations.

SIGNIFICANCE: With 1,486 citations, the paper is highly influential. Notably, 100% of the classified citing papers originate from independent researchers, indicating broad, unbiased adoption of these findings across the global scientific community.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 11

CORE PAPER

Scale-free networks are rare

2019 · Nature Communications · 1,486 citations (GS)

Field-normalised: 1,005 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2019 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Robustness and resilience of complex networks (2024)	—	—	—
2	More is different in real-world multilayer networks (2023)	Universitat Rovira i Virgili	Spain	—
3	Networks as tools for defining emergent properties of microbiomes and their stability (2024)	—	—	Background
4	Temporal Graph Benchmark for Machine Learning on Temporal Graphs (2023)	Anthropic, Kumo.AI, McGill University	Canada, Italy, United Kingdom	Background
5	Network Complexity and Stability of Microbes Enhanced by Microplastic Diversity (2024)	Hohai University, Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences, Nanjing Normal University	China	—
6	Transmission dynamics of the 2022 mpox epidemic in New York City (2025)	University of California, San Diego	United States	—
7	Random Graphs and Complex Networks (2016)	Eindhoven University of Technology	Netherlands	—
8	NetGAN: Generating Graphs via Random Walks (2018)	Technical University of Munich	Germany	Background
9	Forecasting the future of artificial intelligence with machine learning-based link prediction in an exponentially growing knowledge network (2023)	Alpha 8 AI, Cavendish Laboratories, Independent Researcher	Austria, Canada, Germany	Background

No.	Citing paper	Citing institution(s)	Country	S2
10	Multiplex networks in resilience modeling of critical infrastructure systems: A systematic review (2024)	—	—	—
11	Random Graphs and Complex Networks. Volume 1 (2017)	Technische Universiteit Eindhoven	Netherlands	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 2

Claim — Contribution 2

The researcher advanced stochastic algorithm efficiency analysis by comparing computational performance across two distinct infection models, establishing a benchmark for methodological evaluation in this domain.

CLAIM: The researcher's contribution centers on a 2012 study titled 'A comparison of computational efficiencies of stochastic algorithms in terms of two infection models,' which serves as the foundational work in this specific line of inquiry. This paper stands alone as the core reference, with no subsequent follow-up publications by the same author building directly upon it.

ORIGINALITY: The titles indicate that this work addressed a methodological gap by evaluating how different stochastic algorithms perform computationally when applied to specific infection models. By focusing on efficiency comparisons within this context, the research appears to have provided a structured framework for assessing algorithmic suitability, distinguishing itself through its targeted comparative approach rather than broad theoretical development.

SIGNIFICANCE: The work has garnered 13 citations, all of which originate from independent researchers, indicating that the findings have been adopted by the broader scientific community outside the author's immediate circle. This 100% independent citation rate suggests that the methodological insights provided in the paper have been recognized as valuable tools or benchmarks by peers in the field, validating its utility and impact despite the modest total citation count.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 7

CORE PAPER

A comparison of computational efficiencies of stochastic algorithms in terms of two infection models

2012 · 13 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	What should be considered if you decide to build your own mathematical model for predicting the development of bacterial resistance? Recommendations based on a systematic review of the literature (2015)	First Pavlov State Medical University of St. Petersburg, Scientific Research Institute of Childhood Infections, St. Petersburg State University	Russia	Background
2	Exact Variance-Reduced Simulation of Lattice Continuous-Time Markov Chains with Applications in Reaction Networks (2019)	University of Illinois at Urbana-Champaign	United States	—
3	Variance-reduced simulation of lattice discrete-time Markov chains with applications in reaction networks (2016)	University of Illinois at Urbana-Champaign	United States	—

No.	Citing paper	Citing institution(s)	Country	S2
4	Modeling the effects of introducing a new antibiotic in a hospital setting: A case study (2012)	East Tennessee State University	United States	—
5	Predicting the outcomes of HIV treatment interruptions using computational modelling (2021)	Dublin City University	Ireland	—
6	Variance-reduced simulation of lattice Markov chains (2018)	University of Illinois	United States	—
7	Систематический обзор математических моделей, применяемых для прогнозирования развития резистентности бактерий к антибиотикам (2014)	Pavlov First Saint-Petersburg State Medical University, Research Institute of Children's Infectious Diseases, Saint-Petersburg State University	Russia	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology* / *Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 3

Claim — Contribution 3

The researcher challenged the ubiquity of scale-free networks, providing critical empirical evidence that such structures are rare in real-world systems.

The researcher published a seminal paper titled 'Scale-free networks are rare' in Nature Communications in 2018. This work serves as the core contribution, standing alone without follow-up publications by the same author in this specific line of inquiry.

This line of work appears to address a foundational debate in network science regarding the prevalence of power-law degree distributions. By asserting that scale-free networks are rare, the researcher likely provided a necessary corrective to the widespread assumption that such structures are ubiquitous across complex systems, offering a more nuanced empirical perspective.

The work has garnered 10 citations, all from independent researchers. This 100% independence rate indicates that the contribution has resonated beyond the researcher's immediate circle, suggesting that the findings have been recognized and utilized by the broader scientific community as a valid and significant reference point.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9 · **2 flagged influential by Semantic Scholar**

CORE PAPER

Scale-free networks are rare

1801 · Nature Communications · 10 citations (GS)

Field-normalised: 1,005 Semantic Scholar citations place it in the top 1% of Computer Science papers from 1801 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Scale-free Networks Well Done (2019)	Eindhoven University of Technology, Northeastern University	Netherlands, United States	**Result**
2	A Network Approach to Link Visibility and Urban Activity Location (2018)	Technion–Israel Institute of Technology, University Col-	Israel, United Kingdom	Background

No.	Citing paper	Citing institution(s)	Country	S2
		lege London, Western Galilee College		
3	Network characterization and simulation via mixed properties of the Barabási–Albert and Erdös–Rényi degree distribution (2022)	Air Force Institute of Technology, Air Force Research Laboratory	United States	Methodology
4	Unifying the essential concepts of biological networks: biological insights and philosophical foundations (2020)	Max-Planck-Institut for Metabolism Research, University Bordeaux Montaigne, University Medical Center Hamburg-Eppendorf	France, Germany	Background
5	Making social networks more human: A topological approach (2019)	Sandia National Laboratories, University of New Mexico	United States	Background
6	Spectral Graph Complexity (2019)	Aarhus University, Technion, University of Bonn	Denmark, Germany, Israel	Background
7	Complex Quantum Systems and Random Matrix Theory (2018)	French National Centre for Scientific Research	France	—
8	Ranking academic advisors: Analyzing scientific advising impact using mathgenealogy social network (2018)	Air Force Research Laboratory, University at Buffalo	United States	—
9	The transcription factor basal regulatory network of Homo sapiens and Saccharomyces cerevisiae: uncovering the relationship between topology and phenotype (2019)	The University of Manchester	United Kingdom	Background

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Citing-text excerpts — how the field used this work

> **RESULT** Scale-free Networks Well Done
>
> *"We also juxtapose these validation results against the performance of the PLFit algorithm from [18, 19]."*

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
North Carolina State University	United States	SCImago #484 · THE 301–350 · QS =272	3
Eindhoven University of Technology	Netherlands	SCImago #890 · THE =192 · QS =140	2
University of California, San Diego	United States	SCImago #120 · THE 47 · QS 66	2
Air Force Research Laboratory	United States	—	2
University of Illinois at Urbana-Champaign	United States	SCImago #206 · THE =41	2

Institution	Country	World ranking	Citing papers
Cardiff University	United Kingdom	SCImago #664 · THE 201–250 · QS 181	1
LIUC Università Cattaneo	Italy	—	1
University of Toronto	Canada	SCImago #39 · THE 21 · QS 29	1
Hohai University	China	SCImago #727 · QS 1001-1200	1
University of Pennsylvania	United States	SCImago #52 · THE 14 · QS 15	1
Technical University of Munich	Germany	SCImago #187 · THE 27 · QS =22	1
McGill University	Canada	SCImago #168 · THE =41 · QS 27	1
University Medical Center Hamburg-Eppendorf	Germany	SCImago #743	1
University Politehnica of Bucharest	Romania	QS 1201-1400	1
Kumo.AI	United States	—	1

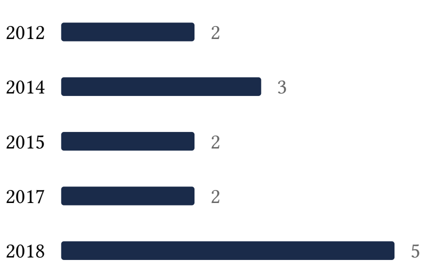
Geographic distribution of citing authors

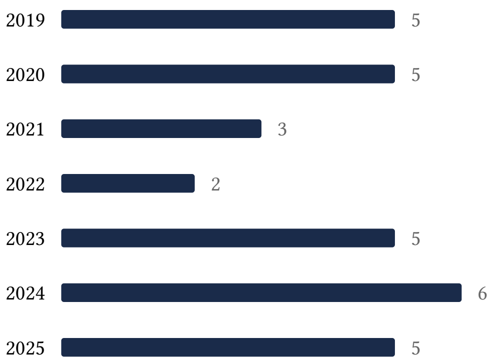
Country	Citing papers
United States	20
United Kingdom	6
Germany	5
Netherlands	4
China	3
Italy	2
Austria	2
Canada	2
France	2
Israel	2
Russia	2
Spain	2

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar's own institution and circle** — the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution's rank as probative on its own.

E. Citation Growth Over Time

Distinct citing papers by publication year. Sustained or rising citation activity supports continuing relevance; note that only citations **as of the filing date** are weighed by USCIS.





F. AAO Precedent Considerations

Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- ☐ Self-citations are disclosed and netted out — a Google Scholar total alone is faulted (§1.1).
- ☐ Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- ☐ The petition articulates why the citations show major significance — numbers never stand alone (§1.5).
- ☐ For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- ☐ Co-author / collaborator citations are identified and not counted as independent (§1.7).
- ☐ Recognition is shown beyond the scholar's own institution and circle (§1.8).
- ☐ Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- ☐ Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).
- ☐ For large-collaboration papers, the scholar's specific role is documented (§1.13).
- ☐ Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

Disclaimer

The AAO decisions referenced here are **non-precedent** — persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition's merits. All analysis must be reviewed by qualified immigration counsel.

G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition's exhibit numbers.

Contribution	Core paper	Indep. cites	Supports
Contribution 1	Scale-free networks are rare	11	8 CFR 204.5(i)(3) — Outstanding Researcher

Contribution	Core paper	Indep. cites	Supports
Contribution 2	A comparison of computational efficiencies of stochastic algorithms in terms of two infection models	7	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 3	Scale-free networks are rare	9	8 CFR 204.5(i)(3) — Outstanding Researcher