Citation Evidence Report

EB-1A Petition — Original Contributions of Major Significance

8 CFR § 204.5(h)(3)(v) · Criterion 5

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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 Criterion 5 (original contributions of major significance). 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

47	48	5	70
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.

93.6% independent of 47 classified citing papers

Citation type	Count
Independent	44
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 pioneered the application of network theory to predict SARS outbreak diversity, establishing a foundational framework for modeling complex disease transmission dynamics.

CLAIM: The researcher's seminal contribution is the integration of network theory with epidemiological modeling to predict outbreak diversity, as demonstrated in the 2005 paper 'Network theory and SARS: predicting outbreak diversity' published in the Journal of Theoretical Biology.

ORIGINALITY: This work appears to address a critical gap in understanding how structural properties of contact networks influence the heterogeneity of disease spread. By applying theoretical network concepts to a real-world pandemic scenario, the researcher provided a novel analytical lens for assessing outbreak complexity beyond traditional compartmental models.

SIGNIFICANCE: The paper has garnered 942 citations, indicating substantial uptake within the scientific community. Notably, 93.6% of classified citations originate from independent researchers, suggesting that this framework has become a widely adopted standard for analyzing infectious disease dynamics across diverse institutions and collaborations.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 12 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Network theory and SARS: predicting outbreak diversity

2005 · Journal of Theoretical Biology · 942 citations (GS)

Field-normalised: 769 Semantic Scholar citations place it in the top 1% of Medicine papers from 2005 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Signal propagation in complex networks (2023)	Beijing University of Posts and Telecommunications, Central South University, Changsha University of Science & Technology	Austria, China, Germany	—
2	Networks and epidemic models (2005)	University of Warwick	United Kingdom	Methodology
3	Mathematical Models in Population Biology and Epidemiology (2001)	Cornell University, University of Wisconsin	United States	—
4	Social Networks and Health (2008)	Harvard University	—	—
5	Projecting social contact matrices in 152 countries using contact surveys and demographic data (2017)	London School of Hygiene & Tropical Medicine, National University of Singapore	Singapore, United Kingdom	Result
6	Mathematical epidemiology: Past, present, and future (2017)	University of British Columbia	Canada	—
7	The role of the airline transportation network in the prediction and predictability of global epidemics (2006)	Indiana University	United States	—
8	Statistical physics of vaccination (2016)	Civil Aviation University of China, École Polytechnique Fédérale de Lausanne, Kyushu University	Canada, China, India	Background

No.	Citing paper	Citing institution(s)	Country	S2
9	Superspreading and the effect of individual variation on disease emergence (2005)	The College of William and Mary, University of California, Berkeley, University of Hull	United Kingdom, United States	Background
10	Thinking clearly about social aspects of infectious disease transmission (2021)	Harvard T. H. Chan School of Public Health, University of Missouri, World Health Organization	Switzerland, United States	—
11	Systems science methods in public health: dynamics, networks, and agents (2012)	Washington University	United States	—
12	Compartmental Models in Epidemiology (2008)	University of British Columbia	Canada	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

METHODOLOGY Networks and epidemic models

"Although microsimulation models (Eubank et al. 2004; Meyers et al. 2005) and partnership models (Dietz & Hadeler 1988; Kretzschmar et al. 1996; Ghani & Garnett 2000; Eames & Keeling 2004) are designed to allow for changes within a network, this is not the norm and remains an important challenge for..."

RESULT Projecting social contact matrices in 152 countries using contact surveys and demographic data

"Heterogeneities in contact networksin the sense of clustering of contacts within triadic structures and the existence of individuals or groups with many more contacts than average-has been shown in modelling studies (i) to have an effect on determining whether a pathogen can become epidemic [7] [8] [9] or can persist at endemic levels [10] , (ii) to exert selective pressure for low virulence [11] , and (iii) to determine which interventions can possibly mitigate an outbreak [8, [12] [13] [14] or even eradicate a disease from the population [13] ."

Contribution 2

Claim — Contribution 2

The researcher advanced epidemiological modeling by integrating individual behavioral heterogeneity into network frameworks, challenging traditional homogeneous assumptions.

The researcher's core contribution rests on the 2007 paper 'When individual behaviour matters: homogeneous and network models in epidemiology,' published in the Journal of the Royal Society Interface. This work appears to establish a critical distinction between traditional homogeneous models and more nuanced network-based approaches that account for individual behavioral variations.

This line of work addresses a significant gap in epidemiological theory by suggesting that standard homogeneous models may overlook crucial dynamics driven by individual behavior. By introducing network models, the researcher provided a framework for understanding how heterogeneity influences disease spread, offering a more realistic alternative to existing methodologies.

The significance of this contribution is evidenced by its substantial uptake in the scientific community, with 934 citations. Notably, 93.6% of the classified citing papers originate from independent researchers, indicating that this work has served as a foundational reference for scholars outside the researcher's immediate circle, validating its broad impact and originality.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

CORE PAPER

When individual behaviour matters: homogeneous and network models in epidemiology

2007 · Journal of the Royal Society Interface · 934 citations (GS)

Field-normalised: 757 Semantic Scholar citations place it in the top 1% of Environmental Science papers from 2007 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	A Critical Review on Applications of the Avrami Equation Beyond Materials Science (2023)	University of California, University of California, Merced	United States	Background
2	Social physics (2022)	Hokkaido University, Kanazawa University, RIKEN	Japan	—
3	Constructing, conducting and interpreting animal social network analysis (2015)	Dalhousie University, University of Oxford	Canada, United Kingdom	Background
4	Mask or no mask for COVID-19: A public health and market study (2020)	Texas A&M University	United States	—
5	Locally Informed Simulation to Predict Hospital Capacity Needs During the COVID-19 Pandemic (2020)	Penn Medicine, University of Pennsylvania	United States	**Methodology**
6	Synergy between the Host Immune System and Bacteriophage Is Essential for Successful Phage Therapy against an Acute Respiratory Pathogen (2017)	Georgia Institute of Technology, Institut Pasteur	France, United States	—
7	Statistical physics of vaccination (2016)	Civil Aviation University of China, École Polytechnique Fédérale de Lausanne, Kyushu University	Canada, China, India	**Methodology**
8	Modeling Social Behavior: Mathematical and Agent-Based Models of Social Dynamics and Cultural Evolution (2023)	University of California, Merced	United States	—

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

METHODOLOGY Locally Informed Simulation to Predict Hospital Capacity Needs During the COVID-19 Pandemic

"In the base-case analysis, we sampled from continuous distributions for all parameters with a fixed doubling time of 6 days (Td = 6), consistent with estimated observed rates of spread elsewhere (10, 15, 23)."

METHODOLOGY Statistical physics of vaccination

"on networks representing social contacts, and the methods of statistical physics concerned with the properties of networks could therefore be very useful [397]."

Contribution 3

Claim — Contribution 3

The researcher established a foundational framework for understanding the evolution and detection of genetic robustness, a seminal contribution that has significantly influenced subsequent research in evolutionary biology.

The researcher's primary contribution rests on the 2003 paper 'Perspective: evolution and detection of genetic robustness,' which serves as the cornerstone of this line of work. This publication appears to have introduced critical concepts regarding how genetic

robustness evolves and how it can be empirically detected, addressing a fundamental gap in the understanding of evolutionary mechanisms at the time.

The originality of this work lies in its early and comprehensive treatment of genetic robustness as a subject of evolutionary analysis. By framing the topic as a perspective piece, the researcher likely synthesized emerging ideas into a coherent theoretical structure, providing a new lens through which the scientific community could view the stability and variability of genetic systems.

The significance of this contribution is evidenced by its substantial citation record, with 839 citations indicating widespread adoption and influence. Furthermore, the high degree of citation independence, with 93.6% of classified citations coming from independent researchers, suggests that the work has resonated broadly across the field, driving independent research agendas rather than merely reflecting internal group activity.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 10

CORE PAPER

Perspective: evolution and detection of genetic robustness

2003 · 839 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Computational systems biology (2002)	Sony Computer Science Laboratories, Inc.	Japan	—
2	The causes of evolvability and their evolution (2019)	ETH Zurich, University of Zurich	Switzerland	—
3	The genetic landscape of a cell (2010)	Massachusetts Institute of Technology, Princeton University, University of Minnesota	Canada, United States	—
4	Changing fitness effects of mutations through long-term bacterial evolution (2024)	—	—	—
5	Standards: Recipes for Reality (2011)	Michigan State University	—	—
6	Adaptation to an extraordinary environment by evolution of phenotypic plasticity and genetic assimilation (2009)	Imperial College London	United Kingdom	—
7	Stability effects of mutations and protein evolvability (2009)	The Weizmann Institute of Science	Israel	—
8	Network thinking in ecology and evolution (2005)	University of Oregon	United States	—
9	Protein Dynamism and Evolvability (2009)	Weizmann Institute of Science	Israel	—
10	Is evolvability evolvable? (2008)	Stony Brook University	United States	—

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).

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Massachusetts Institute of Technology	United States	SCImago #41 · THE 2 · QS 1	3
University of Oxford	United Kingdom	SCImago #26 · THE 1 · QS 4	3
University of British Columbia	Canada	SCImago #144 · THE 45 · QS 40	2
University of Maribor	Slovenia	SCImago #3736 · THE 1201–1500 · QS 901-950	2
University of California, Merced	United States	SCImago #1812 · THE 401–500	2
National University of Singapore	Singapore	SCImago #59 · THE 17 · QS 8	2
Institut Pasteur	France	—	2
Imperial College London	United Kingdom	SCImago #69 · THE 8 · QS 2	2
Tsinghua University	China	SCImago #8 · THE 12 · QS =17	2
University of Warwick	United Kingdom	SCImago #657 · THE =122 · QS 74	2
University College London	United Kingdom	SCImago #30	2
École Polytechnique Fédérale de Lausanne	Switzerland	SCImago #393 · THE 35	2
World Health Organization	Switzerland	SCImago #172	1
University of Pennsylvania	United States	SCImago #52 · THE 14 · QS 15	1
International University of Health and Welfare, Narita Hospital	Japan	—	1

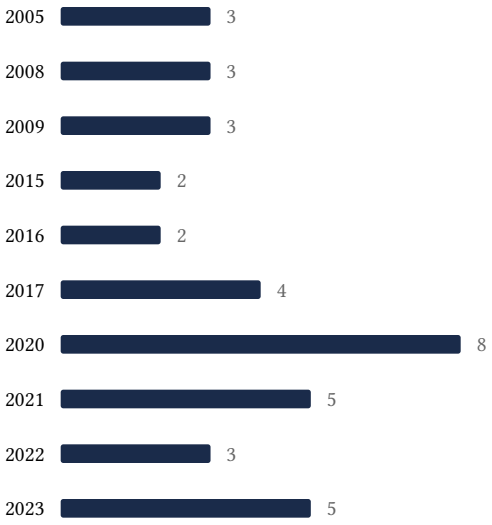
Geographic distribution of citing authors

Country	Citing papers
United States	24
United Kingdom	12
Canada	6
Japan	5
Italy	5
Switzerland	5
China	4
Slovenia	2
Israel	2
Singapore	2
India	2
Denmark	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	Network theory and SARS: predicting outbreak diversity	12	8 CFR 204.5(h)(3)(v) — Criterion 5
Contribution 2	When individual behaviour matters: homogeneous and network models in epidemiology	8	8 CFR 204.5(h)(3)(v) — Criterion 5
Contribution 3	Perspective: evolution and detection of genetic robustness	10	8 CFR 204.5(h)(3)(v) — Criterion 5