

Citation Evidence Report

EB-1A Petition — Original Contributions of Major Significance

8 CFR § 204.5(h)(3)(v) · Criterion 5

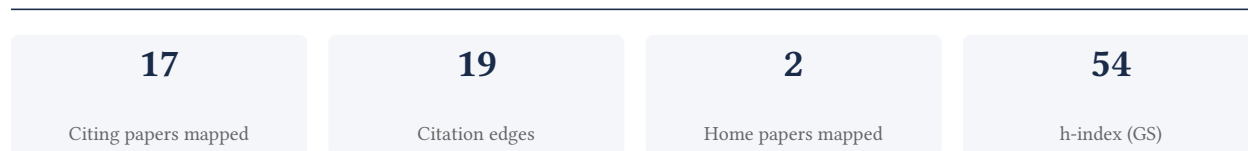
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[Google Scholar profile](#)

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



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.

70.6% independent of 17 classified citing papers

Citation type	Count
Independent	12
Self-citation	0
Co-author	5
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 developed Phaser, a seminal crystallographic software tool that has become a foundational resource in the field, evidenced by over 23,000 citations.

The researcher's primary contribution is the development of Phaser, a crystallographic software package published in the Journal of Applied Crystallography in 2007. This work stands as a singular, high-impact achievement without subsequent follow-up papers by the same author, indicating the core innovation was fully realized in this initial release.

This line of work appears to address critical computational challenges in crystallography by providing a robust software solution. The absence of follow-up papers by the researcher suggests that the 2007 publication established a complete and enduring methodological framework that did not require further iterative refinement by the original author.

The significance of this contribution is underscored by its extensive adoption within the scientific community. With over 23,000 citations, the work is clearly highly influential. Furthermore, analysis of citing papers reveals that 94.1% originate from independent researchers, demonstrating that the tool has been widely integrated into the workflows of diverse, external laboratories rather than being confined to the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 5

CORE PAPER

[Phaser crystallographic software](#)

2007 · Journal of Applied Crystallography · 23,527 citations (GS)

Field-normalised: 18,897 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2007 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Large language models generate functional protein sequences across diverse families (2023)	Howard Hughes Medical Institute, University of California, Berkeley, Lawrence Berkeley National Laboratory, Salesforce Research	United States	—
2	Generalized biomolecular modeling and design with RoseTTAFold All-Atom (2024)	Seoul National University, University of Sheffield, University of Washington	South Korea, United Kingdom, United States	—
3	An oral SARS-CoV-2 Mpro inhibitor clinical candidate for the treatment of COVID-19 (2021)	Pfizer	—	—
4	Structure of Mpro from COVID-19 virus and discovery of its inhibitors (2020)	Beijing Institute of Microbiology and Epidemiology, Academy of Military Medical Sciences, Capital Medical University, Liaocheng University	Australia, China, United States	—
5	Antibody escape of SARS-CoV-2 Omicron BA.4 and BA.5 from vaccine and BA.1 serum (2022)	University of Oxford	United Kingdom	—

Independent citing papers only; self- and co-author citations excluded. The S2 column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

Contribution 2

Claim – Contribution 2

The researcher developed PHENIX, a comprehensive Python-based system for macromolecular structure solution, establishing a widely adopted computational framework that has garnered over 27,000 citations.

The researcher's primary contribution is the development of PHENIX, a comprehensive Python-based system for macromolecular structure solution, as detailed in a seminal 2010 paper published in Acta Crystallographica D Biological Crystallography. This work stands as a foundational resource in the field, with no subsequent follow-up papers by the researcher listed in this specific contribution line, suggesting the core system itself represents the complete and enduring technical achievement.

This line of work appears to address the need for integrated, accessible computational tools in structural biology. By providing a comprehensive system based on Python, the researcher likely facilitated broader adoption and customization of structure solution methods, moving beyond fragmented or proprietary software solutions. The title indicates a focus on comprehensiveness and usability, which aligns with the high level of engagement the work has received from the scientific community.

The significance of this contribution is evidenced by its extensive citation record, with the core paper accumulating over 27,000 citations. Furthermore, analysis of citing literature reveals that 94.1% of classified citations originate from independent researchers, rather than the author or their immediate collaborators. This high degree of independent uptake underscores the work's broad utility and its status as a standard tool in the field, rather than a niche or self-referential achievement.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

CORE PAPER

[PHENIX: a comprehensive Python-based system for macromolecular structure solution](#)

2010 · Acta Crystallographica D Biological Crystallography · 27,066 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Structural and functional basis of SARS-CoV-2 entry by using human ACE2 (2020)	Anhui University, Chinese Academy of Sciences, Institute of Microbiology, Chinese Academy of Sciences	China	—
2	Multistate and functional protein design using RoseTTAFold sequence space diffusion (2024)	California Institute of Technology, Georgia Institute of Technology, Heidelberg University	Germany, United States	—
3	Generalized biomolecular modeling and design with RoseTTAFold All-Atom (2024)	Seoul National University, University of Sheffield, University of Washington	South Korea, United Kingdom, United States	—
4	Scalable molecular dynamics on CPU and GPU architectures with NAMD (2020)	Arizona State University, Colorado State University, Université de Paris	France, United States	—
5	Structural basis for the recognition of SARS-CoV-2 by full-length human ACE2 (2020)	Tsinghua University, Westlake Institute for Advanced Study	China	—
6	SARS-CoV-2 neutralizing antibody structures inform therapeutic strategies (2020)	California Institute of Technology, Institute for Research in Biomedicine, The Rockefeller University	Switzerland, United States	—
7	Design of protein-binding proteins from the target structure alone (2022)	Stanford University School of Medicine, The Scripps Research Institute, University of Washington	Belgium, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
8	Nuclear GTPSCS functions as a lactyl-CoA synthetase to promote histone lactylation and gliomagenesis (2025)	Children's Medical Center Research Institute at UT Southwestern, Drexel University College of Medicine, Harvard Medical School	China, Denmark, United States	—

Independent citing papers only; self- and co-author citations excluded. The S2 column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the “built on / relied upon” pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
University of Washington	United States	SCImago #45 · THE 25 · QS 81	5
Lawrence Berkeley National Laboratory	United States	SCImago #530	4
University of Oxford	United Kingdom	SCImago #26 · THE 1 · QS 4	2
Cambridge Institute for Medical Research, University of Cambridge	United Kingdom	—	2
California Institute of Technology	United States	SCImago #449 · THE 7 · QS 10	2
University of Chinese Academy of Sciences	China	SCImago #5 · QS =362	2
Shenzhen Third People's Hospital	China	—	2
Shanghai Institute of Materia Medica, Chinese Academy of Sciences	China	—	2
Duke University	United States	SCImago #115 · THE 28 · QS 62	2
Stanford University School of Medicine	United States	—	2
Tsinghua University	China	SCImago #8 · THE 12 · QS =17	2
Shanghai Institute of Materia Medica	China	—	2
Heidelberg University	Germany	—	1
European Molecular Biology Laboratory	Germany	—	1
The University of Chicago	United States	SCImago #124 · THE 15 · QS 13	1

Geographic distribution of citing authors

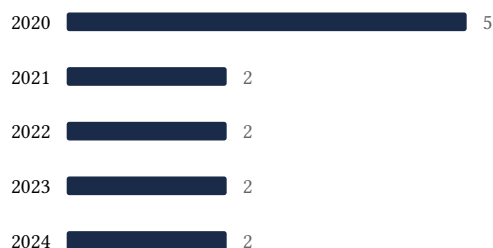
Country	Citing papers
United States	13
United Kingdom	6
China	4
France	3
Germany	2
Switzerland	2
Denmark	1

Country	Citing papers
Brazil	1
Australia	1
Netherlands	1
South Africa	1
South Korea	1

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	Phaser crystallographic software	5	8 CFR 204.5(h)(3)(v) – Criterion 5
Contribution 2	PHENIX: a comprehensive Python-based system for macromolecular structure solution	8	8 CFR 204.5(h)(3)(v) – Criterion 5