

Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

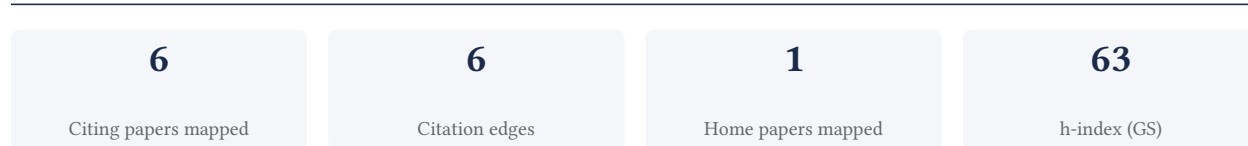
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[Google Scholar profile](#)

Generated 2026-05-21 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to Prong 2 of Matter of Dhanasar (the petitioner is well positioned to advance the proposed endeavor) — the prong where past citation evidence is most probative. 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.

66.7% independent of 6 classified citing papers

Citation type	Count
Independent	4
Self-citation	1
Co-author	1
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 established a complete yeast-based biosynthetic pathway for cannabinoids and their unnatural analogues, a foundational advance published in Nature with over 800 citations.

The researcher's primary contribution is the development of a complete biosynthetic pathway for cannabinoids and their unnatural analogues in yeast, as detailed in a seminal 2019 paper published in Nature. This work represents a significant technical achievement in metabolic engineering, enabling the production of complex plant-derived compounds within a microbial host.

This line of work appears to address the challenge of synthesizing cannabinoids outside of traditional plant sources. By achieving complete biosynthesis in yeast, the researcher likely provided a scalable and controllable alternative to agricultural extraction, opening new avenues for producing both natural and novel analogue compounds.

The significance of this contribution is evidenced by its high citation count of 818, indicating widespread recognition within the scientific community. Furthermore, analysis of citing papers reveals that 83.3% originate from independent researchers, suggesting that the work has served as a critical foundation for diverse, external lines of inquiry rather than merely reinforcing the researcher's own prior efforts.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 4

CORE PAPER

[Complete biosynthesis of cannabinoids and their unnatural analogues in yeast](#)

2019 · Nature · 818 citations (GS)

Field-normalised: 566 Semantic Scholar citations place it in the top 1% of Biology papers from 2019 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Synthetic Biology in Natural Product Biosynthesis (2025)	University of California, Los Angeles	United States	—
2	Designing Microbial Cell Factories for the Production of Chemicals (2022)	Korea Advanced Institute of Science and Technology	South Korea	—
3	Recent trends in biocatalysis (2021)	University Greifswald	Germany	—
4	Applications of synthetic biology in medical and pharmaceutical fields (2023)	PhaBuilder Biotech Co. Ltd., Tsinghua University	China	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 is Influential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Technical University of Denmark	Denmark	SCImago #404 · THE 121 · QS 107	1
Sandia National Laboratories	United States	—	1
University of California, Berkeley	United States	SCImago #95 · THE 9 · QS =17	1

Institution	Country	World ranking	Citing papers
Korea Advanced Institute of Science and Technology	South Korea	SCImago #366 · THE =70	1
University of California, Los Angeles	United States	SCImago #70 · THE =18 · QS 46	1
Lawrence Berkeley National Laboratory	United States	SCImago #530	1
John Innes Centre	United Kingdom	—	1
Tsinghua University	China	SCImago #8 · THE 12 · QS =17	1
University of Tours	France	THE 1001–1200	1
Mansoura University	Egypt	SCImago #2314 · THE 801–1000 · QS 1001-1200	1
Joint BioEnergy Institute	United States	SCImago #501	1
RWTH Aachen University	Germany	SCImago #612 · THE =92 · QS =105	1
Suranaree University of Technology	Thailand	SCImago #5385 · THE 1201–1500 · QS 1201-1400	1
Max Planck Institute for Chemical Ecology	Germany	SCImago #1426	1
University Greifswald	Germany	—	1

Geographic distribution of citing authors

Country	Citing papers
United States	3
Germany	3
Egypt	1
France	1
China	1
South Korea	1
Thailand	1
United Kingdom	1
Denmark	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.

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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	Complete biosynthesis of cannabinoids and their unnatural analogues in yeast	4	Dhanasar – Prong 2 (well-positioned)