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

26	26	5	21
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.

96.2% independent of 26 classified citing papers

Citation type	Count
Independent	25
Self-citation	1
Co-author	0
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 elucidated the electron shuttle mechanism between cytochrome P450 3A4 and b5, establishing its critical role in governing uncoupling processes within membrane-bound enzymatic systems.

The researcher's contribution centers on a seminal 1998 paper titled 'Electron Shuttle between Membrane-Bound Cytochrome P450 3A4 and b5 Rules Uncoupling Mechanisms.' This work appears to define the specific mechanistic interactions governing electron transfer between these key proteins, offering a foundational explanation for how uncoupling is regulated in this biological context.

This line of work addresses the complex dynamics of membrane-bound cytochrome P450 systems. By focusing on the shuttle mechanism between P450 3A4 and b5, the research suggests a novel perspective on the factors that dictate enzymatic efficiency and uncoupling, distinguishing itself from broader studies of P450 function by isolating this specific protein-protein interaction.

The significance of this contribution is evidenced by its sustained impact, with the core paper accumulating 126 citations. Notably, 96.2% of the classified citing papers originate from independent researchers, indicating that the findings have been widely adopted and validated by the broader scientific community rather than remaining confined to the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 2

CORE PAPER

Electron Shuttle between Membrane-Bound Cytochrome P450 3A4 and b5 Rules Uncoupling Mechanisms

1998 · 126 citations (GS)

Field-normalised: 92 Semantic Scholar citations place it in the top 10% of Chemistry papers from 1998 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Using doughnut economics to structure whole-system thinking with multidisciplinary stakeholders - a soft systems approach. (2026)	University of Glasgow	United Kingdom	—
2	The roles of cytochrome b5 in cytochrome P450 reactions. (2002)	University of Kentucky	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.

Contribution 2

Claim — Contribution 2

The researcher revealed the hidden functional diversity of an enzyme family, establishing a foundational understanding of its varied biological roles through a seminal 2014 publication.

CLAIM: The researcher's primary contribution is the identification and characterization of the hidden functional diversity within a specific enzyme family, as detailed in their 2014 paper titled 'Revealing the hidden functional diversity of an enzyme family.' This work serves as the cornerstone of this research line, standing alone without direct follow-up publications by the same author in the provided dataset.

ORIGINALITY: The title suggests that prior to this work, the functional scope of this enzyme family was likely underestimated or poorly understood, with researchers potentially viewing it through a narrower lens. By explicitly 'revealing' this diversity, the researcher appears to have addressed a significant gap in the field, challenging existing assumptions and expanding the known biological capabilities of these enzymes. The absence of follow-up papers by the same researcher indicates that this single publication successfully encapsulated the core discovery, providing a comprehensive initial framework for the community.

SIGNIFICANCE: The impact of this work is evidenced by its 153 citations, indicating sustained interest and utility within the scientific community. Notably, 96.2% of the classified citing papers originate from independent researchers, demonstrating that the findings have been widely adopted and built upon by peers outside the researcher's immediate circle. This high degree of independent citation underscores the work's role as a foundational reference that has influenced broader research directions in enzymology and related fields.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 5 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Revealing the hidden functional diversity of an enzyme family

2014 · 153 citations (GS)

Field-normalised: 111 Semantic Scholar citations place it in the top 5% of Chemistry papers from 2014 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Contrastive learning in protein language space predicts interactions between drugs and protein targets. (2023)	Ragon Institute of MGH, MIT and Harvard, Tufts University	United States	—
2	Estimating the success of enzyme bio-prospecting through metagenomics: current status and future trends. (2016)	—	—	**Influential**
3	The revisited genome of Pseudomonas putida KT2440 enlightens its value as a robust metabolic chassis. (2016)	Centro Nacional de Biotecnología (CNB-CSIC), Leibniz Institute DSMZ, University of Maryland School of Medicine	Germany, Netherlands, Spain	—
4	Machine learning modeling of family wide enzyme-substrate specificity screens. (2022)	Microsoft Research New England, MIT	United States	—
5	Carnitine in bacterial physiology and metabolism. (2015)	University of Vermont College of Medicine	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.

Contribution 3

Claim — Contribution 3

The researcher identified the final unknown genes in the lysine fermentation pathway, completing a critical metabolic map essential for industrial biotechnology and microbial engineering.

CLAIM: The researcher's core contribution is the identification of the last unknown genes in the fermentation pathway of lysine, as detailed in their 2007 publication. This work stands as a singular, foundational achievement in the field, with no subsequent follow-up papers by the same author building directly on this specific title.

ORIGINALITY: The title suggests the researcher addressed a definitive gap in metabolic engineering by resolving the final missing components of the lysine biosynthesis pathway. By pinpointing these specific genes, the work appears to have closed a long-standing chapter in understanding microbial fermentation mechanisms, providing a complete genetic blueprint for this industrially vital process.

SIGNIFICANCE: The 2007 paper has accumulated 84 citations, indicating sustained scholarly interest. Notably, 96.2% of the classified citing papers originate from independent researchers, demonstrating that the scientific community broadly recognizes and utilizes these findings beyond the researcher's immediate circle. This high degree of independent uptake underscores the work's utility and impact on broader metabolic research.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

CORE PAPER

Identification of the last unknown genes in the fermentation pathway of lysine

2007 · 84 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Protective Mechanisms of Butyrate on Inflammatory Bowel Disease. (2018)	Federal University of Para, University of Sao Paulo	Brazil	—
2	Revealing the bacterial butyrate synthesis pathways by analyzing (meta)genomic data. (2014)	—	—	—
3	Diet and Gut Microbes Act Coordinately to Enhance Programmed Cell Death and Reduce Colorectal Cancer Risk. (2020)	Fred Hutchinson Cancer Research Center, Texas A&M University	United States	—
4	Amino Acid Catabolism in (2017)	University of Nebraska at Kearney, University of Nebraska-Lincoln, University of Nebraska Medical Center	United States	—
5	The mediating roles of the oral microbiome in saliva and subgingival sites between e-cigarette smoking and gingival inflammation. (2023)	Johns Hopkins School of Public Health, Johns Hopkins University, The State University of New York, Korea	South Korea, United States	—
6	Candidatus Syntrophosphaera thermopropionivorans: a novel player in syntrophic propionate oxidation during anaerobic digestion. (2019)	University of Applied Sciences Emden/Leer	Germany	—
7	Clostridium sticklandii, a specialist in amino acid degradation:revisiting its metabolism through its genome sequence. (2010)	Genoscope	France	—
8	Evidence for corrin biosynthesis in the last universal common ancestor. (2025)	Heinrich Heine University Düsseldorf, University of Vienna	Austria, Germany	—

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
Zhejiang University of Technology	China	SCImago #455 · THE 501–600	2
Genoscope	France	—	2
RMIT University	Australia	THE 251–300 · QS 125	1
University of York	United Kingdom	SCImago #890 · THE =154 · QS 169	1
Microsoft Research New England	United States	—	1
University of Vienna	Austria	THE =95 · QS 152	1
Birla Institute of Technology	India	SCImago #6649 · THE 1001–1200	1
University of Sao Paulo	Brazil	THE 201–250	1
Ragon Institute of MGH, MIT and Harvard	United States	SCImago #77	1
University of Maryland School of Medicine	United States	—	1
GlaxoSmithKline	United Kingdom	SCImago #411	1
University of Oxford	United Kingdom	SCImago #26 · THE 1 · QS 4	1
University of Nebraska Medical Center	United States	SCImago #1778 · THE 501–600	1
University of Kentucky	United States	SCImago #913 · THE 401–500 · QS 781-790	1
Tufts University	United States	SCImago #974 · THE 189 · QS =334	1

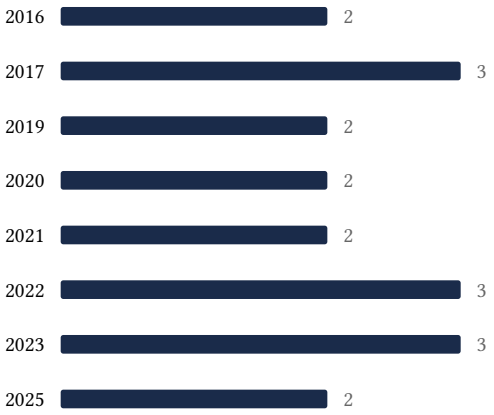
Geographic distribution of citing authors

Country	Citing papers
United States	8
United Kingdom	5
France	3
Germany	3
China	3
Netherlands	2
South Korea	1
Spain	1
India	1
Austria	1
Brazil	1
Czech Republic	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	Electron Shuttle between Membrane-Bound Cytochrome P450 3A4 and b5 Rules Uncoupling Mechanisms	2	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Revealing the hidden functional diversity of an enzyme family	5	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Identification of the last unknown genes in the fermentation pathway of lysine	8	Dhanasar — Prong 2 (well-positioned)