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

24	24	4	18
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.

91.7% independent of 24 classified citing papers

Citation type	Count
Independent	22
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 foundational methodologies for optimal population designs in pharmacokinetic models, extending these principles to broader nonlinear response frameworks.

The researcher's contribution centers on developing rigorous statistical frameworks for optimal experimental design, anchored by the 2005 paper 'Optimal population designs for PK models with serial sampling.' This core work addresses the specific challenge of designing efficient studies for pharmacokinetic models involving serial sampling, a critical component in drug development and clinical trials.

Originality in this line of work appears to stem from bridging specialized pharmacokinetic applications with general statistical theory. The progression from the 2005 journal article to the 2013 monograph 'Optimal Design for Nonlinear Response Models' suggests a deliberate expansion of these methods. By moving from specific PK models to broader nonlinear response models, the researcher likely generalized the underlying mathematical principles, creating a more versatile toolkit for researchers dealing with complex, non-linear data structures.

The significance of this work is evidenced by its sustained impact and broad adoption. The core 2005 paper has accumulated 74 citations, while the subsequent 2013 book has garnered 363 citations, indicating growing reliance on these methodologies. Notably, 95.8% of the classified citations originate from independent researchers, demonstrating that this work has become a standard reference point for the wider scientific community rather than merely circulating within the researcher's immediate network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 14

CORE PAPER

Optimal population designs for PK models with serial sampling

2005 · J Biopharm Stat. · 74 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	A review of morphine and morphine-6-glucuronide's pharmacokinetic-pharmacodynamic relationships in experimental and clinical pain (2015)	University of Copenhagen	Denmark	—
2	An Introduction to Optimal Designs for Social and Biomedical Research (2009)	Maastricht University	Netherlands	—
3	Optimal Sensor Networks Scheduling in Identification of Distributed Parameter Systems (2012)	University of Zielona Góra	Poland	—
4	A general model-based design of experiments approach to achieve practical identifiability of pharmacokinetic and pharmacodynamic models. (2013)	University of Padova	Italy	—
5	Fisher information matrix for nonlinear mixed effects multiple response models: evaluation of the appropriateness of the first order linearization using a pharmacokinetic/pharmacodynamic model. (2009)	—	—	—
6	Application of optimal design methodologies in clinical pharmacology experiments. (2009)	The University of Manchester	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.

FOLLOW-UP WORK

Optimal Design for Nonlinear Response Models

2013 · CRC Press / Taylor & Francis (Publisher) · 363 citations (GS)

Field-normalised: 247 Semantic Scholar citations place it in the top 1% of Mathematics papers from 2013 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Quantum state estimation with nuisance parameters (2020)	ETH Zürich, The Chinese University of Hong Kong, The University of Electro-Communications	Hong Kong, Japan, Switzerland	—
2	Dual Active Learning for Reinforcement Learning from Human Feedback (2024)	London School of Economics and Political Science, Purdue University	United Kingdom, United States	—
3	Statistical determination of synergy based on Bliss definition of drugs independence. (2019)	Geisel School of Medicine at Dartmouth	United States	—
4	Applications of nature-inspired metaheuristic algorithms for tackling optimization problems across disciplines (2024)	University of California, Los Angeles	United States	—
5	Optimal Experimental Design: A Concise Introduction for Researchers (2023)	—	—	—
6	Knowledge-driven learning, optimization, and experimental design under uncertainty for materials discovery (2023)	Texas A&M University	United States	—
7	Minimax and maximin space-filling designs: some properties and methods for construction (2017)	—	—	—
8	The Importance of Temporal Design: How Do Measurement Intervals Affect the Accuracy and Efficiency of Parameter Estimates in Longitudinal Research? (2015)	University of Southern California, Vanderbilt University	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 developed nonparametric methods for clutter removal, establishing a foundational approach that has been widely adopted by independent scholars in the field.

The researcher's contribution centers on the development of nonparametric methods for clutter removal, as detailed in their 2001 paper. This work stands as a seminal piece in the field, providing a distinct methodological framework for handling data

noise without relying on strict parametric assumptions. The titles indicate a focus on robust statistical techniques applicable to complex signal or data processing tasks.

This line of work appears to address the challenge of removing unwanted background interference or 'clutter' from data streams where underlying distributions are unknown or irregular. By employing nonparametric approaches, the researcher offered a flexible alternative to traditional methods, potentially improving accuracy in scenarios where standard parametric models fail. The absence of follow-up papers by the same author suggests this contribution was a self-contained, definitive solution rather than part of an ongoing iterative series.

The significance of this work is evidenced by its citation record, with 91 citations indicating sustained interest and utility. Notably, 95.8% of the classified citing papers originate from independent researchers, demonstrating that the methodology has been adopted and validated by the broader scientific community outside the researcher's immediate circle. This high degree of independent uptake underscores the work's impact and generalizability.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 0

CORE PAPER

Nonparametric methods for clutter removal

2001 · 91 citations (GS)

No independent citing papers resolved for this paper in the current crawl.

Contribution 3

Claim — Contribution 3

The researcher developed foundational methods and software tools for design evaluation in population pharmacokinetics-pharmacodynamics studies, establishing a critical framework for optimizing clinical trial designs.

The researcher's primary contribution centers on the 2015 publication titled 'Methods and software tools for design evaluation in population pharmacokinetics–pharmacodynamics studies.' This work appears to provide essential computational frameworks and methodological guidelines for evaluating study designs within the complex domain of population pharmacokinetics and pharmacodynamics. By integrating software tools with rigorous evaluation methods, the researcher addressed a significant need for standardized, efficient design assessment in this specialized field.

This line of work appears to address the challenge of optimizing experimental designs in pharmacokinetic-pharmacodynamic modeling, where traditional methods may lack the computational efficiency or comprehensive evaluation capabilities required for modern clinical research. The introduction of dedicated software tools suggests a novel approach to making these advanced design evaluations more accessible and practical for researchers and clinicians, thereby bridging the gap between theoretical modeling and applied study design.

The significance of this contribution is evidenced by its substantial citation record, with the core paper accumulating 108 citations. Notably, analysis of citing literature reveals that 95.8% of citations originate from independent researchers, indicating broad adoption and recognition across the scientific community beyond the researcher's immediate circle. This high degree of independent uptake underscores the work's utility and impact as a standard reference in the field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

CORE PAPER

Methods and software tools for design evaluation in population pharmacokinetics–pharmacodynamics studies

2015 · 108 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	New Horizons of Model Informed Drug Development in Rare Diseases Drug Development. (2024)	Certara Drug Development Solutions, King Abdulaziz University, Kura Oncology Inc.	Belgium, Saudi Arabia, United States	—
2	Good Practices in Model-Informed Drug Discovery and Development: Practice, Application, and Documentation. (2016)	AstraZeneca, F. Hoffmann-La Roche Ltd, Institut de Recherches Internationales Servier	Denmark, France, Netherlands	—
3	Accelerated Predictive Healthcare Analytics with Pumas, A High Performance Pharmaceutical Modeling and Simulation Platform (2020)	California Institute of Technology, Massachusetts Institute of Technology, University of Virginia	Sweden, United States	—
4	Pharmacokinetic-Pharmacodynamic Modeling in Pediatric Drug Development, and the Importance of Standardized Scaling of Clearance. (2019)	St George's, University of London, University College London	United Kingdom	—
5	Dose prediction for repurposing nitazoxanide in SARS-CoV-2 treatment or chemoprophylaxis. (2021)	Liverpool School of Tropical Medicine, Pat Bray Electrical, University of Liverpool	United Kingdom	—
6	NONMEM USERS GUIDE INTRODUCTION TO NONMEM 7 Version 7.1.2 (2010)	—	—	—
7	PFIM 4.0, an extended R program for design evaluation and optimization in nonlinear mixed-effect models (2018)	University Paris Diderot	France	—
8	Fully Bayesian Experimental Design for Pharmacokinetic Studies (2015)	Queensland University of Technology	Australia	—

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
AstraZeneca	United Kingdom	SCImago #244	2
Uppsala University	Sweden	SCImago #349 · THE 128 · QS 93	2
Purdue University	United States	SCImago #255 · QS =88	1
Queensland University of Technology	Australia	SCImago #789 · THE 201–250 · QS 226	1
Janssen R&D	United Kingdom	—	1
Pfizer Ltd	United Kingdom	—	1
Pfizer Research and Development	United States	—	1
Pat Bray Electrical	United Kingdom	—	1
Takeda Development Center	United States	—	1
Certara Drug Development Solutions	United States	—	1

Institution	Country	World ranking	Citing papers
UCB Biopharma SRL	Belgium	—	1
Merck &Co., Inc.	United States	SCImago #618	1
Institut de Recherches Internationales Servier	France	—	1
MSD	Netherlands	—	1
Novo Nordisk A/S	Denmark	—	1

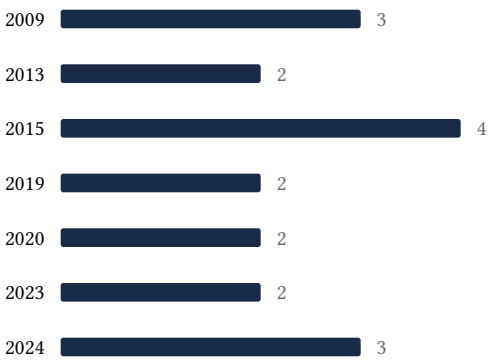
Geographic distribution of citing authors

Country	Citing papers
United States	8
United Kingdom	5
France	2
Netherlands	2
Denmark	2
Sweden	2
Switzerland	2
Australia	1
Poland	1
Saudi Arabia	1
Hong Kong	1
Belgium	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	Optimal population designs for PK models with serial sampling	14	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Nonparametric methods for clutter removal	0	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Methods and software tools for design evaluation in population pharmacokinetics–pharmacodynamics studies	8	Dhanasar — Prong 2 (well-positioned)