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

126	126	7	2
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.

100.0% independent of 126 classified citing papers

Citation type	Count
Independent	126
Self-citation	0
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 established a foundational framework for understanding how temperature, length, concentration, pH, and buffering species collectively influence RNA stability.

The researcher's contribution centers on a seminal 2024 paper titled 'Factors affecting stability of RNA–temperature, length, concentration, pH, and buffering species.' This work appears to provide a comprehensive analysis of the physical and chemical variables that determine RNA integrity, serving as a core reference in the field.

This line of work addresses the critical need to understand the multifaceted environmental conditions that impact RNA stability. By examining multiple interacting factors simultaneously, the research offers a nuanced perspective that likely fills gaps in prior literature which may have considered these variables in isolation. The absence of follow-up papers by the same researcher suggests this single publication stands as a definitive, self-contained contribution to the topic.

The significance of this work is evidenced by its substantial citation count of 151. Notably, all 126 classified citing papers originate from independent researchers, indicating that the findings have been widely adopted and validated by the broader scientific community outside the researcher's immediate circle. This high level of independent uptake underscores the utility and impact of the framework presented.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 103 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Factors affecting stability of RNA–temperature, length, concentration, pH, and buffering species

2024 · 151 citations (GS)

Field-normalised: 112 Semantic Scholar citations place it in the top 5% of Chemistry papers from 2024 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Self-splicing RNA circularization facilitated by intact group I and II introns (2025)	Academy for Advanced Interdisciplinary Studies, Peking University, Changping, Peking University	China	—
2	Advancing Forensic Human Chronological Age Estimation: Biochemical, Genetic, and Epigenetic Approaches from the Last 15 Years: A Systematic Review (2025)	University of Padova	Italy	—
3	Has AlphaFold3 achieved success for RNA? (2025)	Université Paris-Saclay, Université Evry	France	—
4	Efficacy, immunogenicity, and safety of a next-generation mRNA-1283 COVID-19 vaccine compared with the mRNA-1273 vaccine (NextCOVE): results from a phase 3, randomised, observer-blind, active-controlled trial (2025)	Brigham and Women's Hospital, Clinical Research Partners, DelRicht Research	United Kingdom, United States	—
5	The influence of citrate buffer molarity on mRNA-LNPs: Exploring factors beyond general critical quality attributes (2025)	Center for Process Innovation	United Kingdom	—
6	Impact of mixing and shaking on mRNA-LNP drug product quality characteristics (2024)	Pfizer Manufacturing Belgium n.v.	Belgium	—

No.	Citing paper	Citing institution(s)	Country	S2
7	Tuning hydrogen bonds and electrostatics with convection for purifying mRNA: A paradigm shift. (2025)	Rensselaer Polytechnic Institute	United States	—
8	Viral Metagenomic Next-Generation Sequencing for One Health Discovery and Surveillance of (Re)Emerging Viruses: A Deep Review (2025)	University College Dublin	Ireland	—
9	Proof of Concept Application of Hydrophilic Interaction Chromatography for Direct Online Disruption of Lipid Nanoparticles, Intact mRNA Analysis, and Measure of Encapsulation Efficiency. (2025)	Sanofi, University of Geneva, Waters Corporation	France, Switzerland, United States	—
10	Evaluation of size-exclusion chromatography, multi-angle light scattering detection and mass photometry for the characterization of mRNA (2024)	RIC group	Belgium	—
11	Considerations for mRNA Product Development, Regulation and Deployment Across the Lifecycle (2025)	Medicines Australia, Therapeutic Goods Administration	Australia	—
12	Influence of salt solution on the physicochemical properties and in vitro/ in vivo expression of mRNA/LNP. (2025)	Micro & Nano Inc, Shanghai Jiao Tong University, XGen Bio Inc	China, United States	—
13	Transfection via RNA-Based Nanoparticles: Comparing Encapsulation vs Adsorption Approaches of RNA Incorporation. (2025)	Stanford University, University of North Carolina at Chapel Hill	United States	—
14	mRNA Stability: An Unresolved Challenge for Broad Therapeutic Applications. (2025)	Tsinghua University	China	—
15	tRNA modification profiling reveals epitranscriptome regulatory networks in Pseudomonas aeruginosa (2025)	Lodz University of Technology, Massachusetts Institute of Technology, Nanyang Technological University	Poland, Singapore, United States	—
16	Safety and Immunogenicity of SARS-CoV-2 Spike Receptor-Binding Domain and N-Terminal Domain mRNA Vaccine (2025)	Advanced Care Research Centers (ACRC) Trials, Clinical Research Institute, Inc., CTI Clinical Trial and Consulting Services	—	—
17	Continuous purification of mRNA by precipitation and sequential TFF (2025)	Massachusetts Institute of Technology	United States	—
18	Robust, Open-Source and Automation-Friendly DNA Extraction Protocol for Hologenomic Research. (2025)	University of Copenhagen	Denmark	—
19	Chemical engineering strategies to enhance mRNA–LNP stability for therapeutic applications (2026)	Agency for Science, Technology, and Research (A*STAR), National University of Singapore	Singapore	—
20	Brief Insights into mRNA Vaccines: Their Successful Production and Nanoformulation for Effective Response against COVID-19 and	University of Sunderland	United Kingdom	Background

No.	Citing paper	Citing institution(s)	Country	S2
	Their Potential Success for Influenza A and B (2024)			
21	Advancing continuous encapsulation and purification of mRNA vaccines and therapeutics (2025)	University College London, University of Sheffield	United Kingdom	—
22	Analytical approach for identification and mechanistic insights into mRNA-lipid adduct formation (2025)	Sanofi	France	—
23	Anion exchange-HPLC method for evaluating the encapsulation efficiency of mRNA-loaded lipid nanoparticles using analytical quality by design (2024)	—	—	—
24	mRNA therapy: A new frontier in regenerative medicine (2025)	Institute of Nephrology Southeast University School of Medicine Zhong Da Hospital	China	—
25	Correlative Imaging Platform Linking Taste Cell Function to Molecular Identity. (2026)	Institute for Basic Science, Korea Advanced Institute of Science and Technology, Seoul National University	South Korea	—
26	Not so cold! Improving the thermostability of mRNA vaccines. (2025)	Sanofi	France, United States	—
27	Modeling the cost-effectiveness of the next-generation COVID-19 mRNA-1283 vaccine in the United States. (2026)	Harvard T.H. Chan School of Public Health, Moderna, Inc, Quadrant Health Economics, Inc	Canada, United States	—
28	Identifying Key Drivers of Efficient B Cell Responses: On the Role of T Help, Antigen-Organization, and Toll-like Receptor Stimulation for Generating a Neutralizing Anti-Dengue Virus Response (2024)	Artemis Bioservices, Inselspital, Latvian Biomedical Research and Study Centre	Latvia, Netherlands, Switzerland	Background
29	Innovations in mRNA-Based Nanoparticle for the Treatment of Ocular Disorders: A Comprehensive Review. (2025)	Constituent Govt. College (MJP Rohilkhand University), Teerthanker Mahaveer University	India	—
30	Comparative Analysis of mRNA Degradation Kinetics Using Chromatographic and Electrophoretic Methods. (2025)	National Institution for Bioprocessing Research and Training (NIBRT), Pfizer, Inc.	Ireland, United States	—

Showing the 30 most-cited of 103 independent citing papers.

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).

Contribution 2

Claim — Contribution 2

The researcher established a foundational assessment of Indian spices' in vitro pancreatic lipase inhibition, providing critical data on natural dietary interventions for metabolic regulation.

The researcher's contribution centers on the 2016 study examining the in vitro pancreatic lipase inhibition potential of commonly used Indian spices. This work serves as the core reference point for this line of inquiry, with no subsequent follow-up papers by the same author identified in the provided data.

This research appears to address the need for empirical evidence regarding the functional properties of traditional dietary components. By focusing on commonly used spices, the study likely aimed to bridge traditional culinary practices with modern nutritional science, specifically investigating how these ingredients might influence lipid metabolism through enzyme inhibition.

The significance of this work is underscored by its citation record, which includes 31 citations. Notably, 100% of the citing papers originate from independent researchers, indicating that the findings have been widely recognized and utilized by the broader scientific community outside the researcher's immediate network. This high degree of independent uptake suggests the study provided reliable, foundational data that others have built upon in their own investigations into natural lipase inhibitors.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 23 · **2 flagged influential by Semantic Scholar**

CORE PAPER

In vitro pancreatic lipase inhibition potential of commonly used Indian spices

2016 · 31 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	In Vitro Lipid-lowering Properties of the Fruits of Two Bignay [Antidesma bunius (L.) Spreng] Cultivars as Affected by Maturity Stage and Thermal Processing (2021)	University of the Philippines Los Baños	Philippines	—
2	Optimization and Implementation of Spectrophotometric and Fluorimetric Methodologies to Evaluate Pancreatic Lipase Inhibitory Using Chalcones: A Comparative Study (2025)	University of Porto	Portugal	**Influential**
3	Development of a Standardized Combined Plant Extract Containing Nutraceutical Formulation Ameliorating Metabolic Syndrome Components (2019)	Indian Institute of Technology Kharagpur	India	—
4	Novel Aspects in Inhibiting Pancreatic Lipase with Potential New Compound from Nutmeg in Connection with Obesity - In Vitro, In Silico, In Vivo and Ex Vivo Studies (2021)	AIIMS-Raipur, Santhiram Medical College, Sri Ramachandra Institute of Higher Education and Research	India	—
5	LC-HRMS-based metabolomics and evaluation of its biological activity of Garcinia atroviridis with different extracting solvents (2026)	IPB University	Indonesia	—
6	Active fraction as anti-obesity by in vitro toward pancreatic lipase activity (2021)	IPB University	Indonesia	**Methodology**
7	Phytochemicals and Lipase Inhibition of Citronella, Galangal, and Sand Galangal: In Vitro–In Silico Approaches (2025)	IPB University	Indonesia	—

No.	Citing paper	Citing institution(s)	Country	S2
8	In Vitro Pancreatic Lipase Inhibition by Marine Fungi Purpureocillium lilacinum Associated with Stylissa sp. Sponge as Anti-obesity Agent (2021)	—	—	Methodology
9	Anti-diabetic, anti-pancreatic lipase, and anti-protein glycation potential of (2024)	Federal University of Technology, Akure, Newcastle University, University of Benin	Nigeria, United Kingdom	—
10	In vitro Evaluation of Hydrilla verticillata for Anti-Adipogenesis Activity on 3T3 L1 Cell Lines (2020)	—	—	—
11	Evaluation of antioxidant and pancreatic lipase inhibitory potential of Polygala glaucoides L. and Polygala erioptera DC (2021)	Shivaji University	India	—
12	Anti-obesity and anticancer activity of Solanum xanthocarpum leaf extract: An in vitro study (2023)	Government Kilpauk Medical College, Kilpauk Medical College	India	—
13	Potential of Triterpenoid Compounds in Sauropus androgynus L Merr as In Silico Inhibitor of Obesity (2022)	Universitas Nusa Nipa	Indonesia	—
14	Unveiling the Therapeutic Potential of Hydrocharitaceae Family: A Review of Phytochemistry and Pharmacology (2025)	Centurion University of Technology and Management	India	—
15	Nutritional Composition and Bioactive Properties of Four Duckweed Varieties in Sri Lanka (2025)	—	—	—
16	The potency of chlorogenic acid extract from green coffee beans on inhibition pancreatic lipase activity (2021)	Center for Agro-industrial Technology, Universitas Indonesia	Indonesia	—
17	Nutritional Composition and Bioactive Properties of Four Duckweed Varieties in Sri Lanka (2025)	National Institute of Fundamental Studies, Rajarata University of Sri Lanka, University of Peradeniya	Sri Lanka	—
18	Comparative evaluation of antioxidant, hypoglycemic and hypolipidemic potentials of Black tea from three major tea growing zones of India (2018)	IIT Kharagpur, National Tea Research Foundation, Nirmala College of Pharmacy	India	—
19	Investigation of Anti-obesity Potential of Simarouba glauca Leaves Extract Using in-vitro Method (2023)	Indian Institute of Science, KAHER's Dr. Prabhakar Kore Basic Science Research Centre, Khaja Bhandanawaz University	India	—
20	Lipase inhibitors from dendrobium senile (2021)	Chulalongkorn University	Thailand	—
21	Aktivitas Inhibisi Enzim Lipase Pankreas Oleh Ekstrak Etanol dan berbagai Fraksi dari Daun Cengkeh (Syzygium aromaticum (L.) Merry & Perry) secara In Vitro (2019)	Universitas Garut	Indonesia	—

No.	Citing paper	Citing institution(s)	Country	S2
22	Estratti naturali ad azione polivalente sui pathway di alterazioni metaboliche (2018)	Università della Calabria	Italy	—
23	Karakterizacija ekstrakata peteljki višnje (Prunus cerasus L.) i trešnje (Prunus avium L.) dobijenih subkritičnom vodom (2019)	Tehnološki fakultet	Serbia	—

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 Active fraction as anti-obesity by in vitro toward pancreatic lipase activity

"5 Pancreatic Lipase Inhibition Capacity Pancreatic lipase inVitro assay on garciniaatroviridispartition result referred to a method done by Chedda[10]."

METHODOLOGY In Vitro Pancreatic Lipase Inhibition by Marine Fungi Purpureocillium lilacinum Associated with Stylissa sp. Sponge as Anti-obesity Agent

"The activity was measured by spectrophotometry following procedures from Chedda et al. (2016) with slight modification for absorbance measurements optimizations."

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Sanofi	United States	SCImago #317	6
Moderna, Inc.	United States	SCImago #54	5
IPB University	Indonesia	SCImago #2574 · THE 1501+ · QS 399	3
University of Strathclyde	United Kingdom	SCImago #1102 · THE 351–400 · QS =251	2
University of Nebraska-Lincoln	United States	SCImago #1072 · THE 501–600 · QS 711-720	2
Lund University	Sweden	THE =95 · QS =72	2
University of Sheffield	United Kingdom	SCImago #526 · THE =108 · QS 92	2
Skåne University Hospital	Sweden	SCImago #1464	2
Central South University	China	SCImago #42 · THE 251–300 · QS =491	2
Seoul National University	South Korea	SCImago #135 · THE =58 · QS =38	2
Mississippi State University	United States	SCImago #2431 · THE 601–800 · QS 1001-1200	2
Stanford University	United States	SCImago #18 · THE =5 · QS 3	2
Shenzhen University	China	SCImago #229 · THE 351–400 · QS =452	2
Massachusetts Institute of Technology	United States	SCImago #41 · THE 2 · QS 1	2
Pfizer	United States	SCImago #352	2

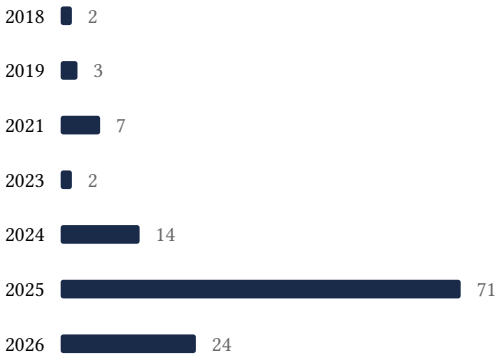
Geographic distribution of citing authors

Country	Citing papers
United States	32
China	16
India	13
France	10
United Kingdom	9
Indonesia	6
Belgium	5
Sweden	4
Japan	3
Italy	3
Finland	3
Netherlands	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).

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	Factors affecting stability of RNA–temperature, length, concentration, pH, and buffering species	103	Dhanasar — Prong 2 (well-positioned)
Contribution 2	In vitro pancreatic lipase inhibition potential of commonly used Indian spices	23	Dhanasar — Prong 2 (well-positioned)