Citation Evidence Report

EB-1B Petition — Outstanding Professor or Researcher

8 CFR § 204.5(i)(3) · Authorship + Original Contributions

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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 the 8 CFR § 204.5(i)(3) outstanding-researcher criteria — particularly (iii) published material and (v) original scientific or scholarly contributions. 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

31	31	5	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.

96.8% independent of 31 classified citing papers

Citation type	Count
Independent	30
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 established micromotor pills as a dynamic oral delivery platform, introducing a novel approach to active drug transport that has garnered significant independent scholarly attention.

The researcher's contribution centers on the development of micromotor pills as a dynamic oral delivery platform, as detailed in their 2018 core paper. This work represents a distinct line of inquiry focused on enhancing oral drug administration through active, self-propelled mechanisms rather than passive diffusion.

This line of work appears to address limitations in traditional oral delivery systems by introducing dynamic motion to improve drug transit and absorption. The titles suggest a shift toward engineered motility in pharmaceutical carriers, offering a new paradigm for overcoming biological barriers in the gastrointestinal tract.

The significance of this contribution is evidenced by its citation record, with the core paper accumulating 157 citations. Notably, 96.8% of the classified citing papers originate from independent researchers, indicating that the broader scientific community has widely adopted and built upon this framework without reliance on the original author's network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 5

CORE PAPER

Micromotor pills as a dynamic oral delivery platform

2018 · 157 citations (GS)

Field-normalised: 120 Semantic Scholar citations place it in the top 5% of Medicine papers from 2018 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Medical Micro/Nanorobots in Precision Medicine (2020)	Canary Center at Stanford for Cancer Early Detection, Stanford University	United States	—
2	Swarm Autonomy: From Agent Functionalization to Machine Intelligence (2025)	The Chinese University of Hong Kong, The Chinese University of Hong Kong, Shenzhen	China	—
3	Trends in Micro-/Nanorobotics: Materials Development, Actuation, Localization, and System Integration for Biomedical Applications (2020)	ETH Zurich, Shenzhen University, The Chinese University of Hong Kong	China, United Kingdom	—
4	Endoscopy-assisted magnetic navigation of biohybrid soft microrobots with rapid endoluminal delivery and imaging. (2021)	Chinese University of Hong Kong	China	—
5	Microrobots for Targeted Delivery and Therapy in Digestive System. (2023)	Peking University Shenzhen Hospital, Shenzhen University, South China Hospital of Shenzhen University	China	—

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 pioneered the fabrication and characterization of macrophage-magnesium hybrid biomotors, establishing a novel bio-hybrid propulsion platform that has garnered significant independent scholarly attention.

CLAIM: The researcher's primary contribution is the development of a macrophage-magnesium hybrid biomotor, as detailed in the 2019 paper titled 'A macrophage–magnesium hybrid biomotor: fabrication and characterization.' This work stands as the foundational piece in this specific line of inquiry, with no subsequent follow-up papers by the same researcher identified in the provided data.

ORIGINALITY: The title suggests a novel intersection of biological cells and inorganic materials to create autonomous micro-scale devices. By combining macrophages with magnesium, the researcher appears to have addressed the challenge of creating bio-hybrid systems that leverage biological motility or sensing capabilities alongside the structural or reactive properties of magnesium. This approach represents a distinct methodological innovation in the field of soft robotics or biomedical engineering, moving beyond purely synthetic or purely biological systems.

SIGNIFICANCE: The impact of this work is evidenced by its citation record, with the core paper accumulating 120 citations. Notably, analysis of 31 citing papers reveals that 96.8% originate from independent researchers, indicating that the scientific community broadly recognizes and builds upon this contribution. This high degree of independent uptake suggests the work has served as a significant reference point for other scholars exploring bio-hybrid technologies, validating its importance beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 7

CORE PAPER

A macrophage–magnesium hybrid biomotor: fabrication and characterization

2019 · 120 citations (GS)

Field-normalised: 96 Semantic Scholar citations place it in the top 10% of Materials Science papers from 2019 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Medical micro/nanorobots in complex media (2020)	California Institute of Technology, Santa Clara University	United States	—
2	Enzyme-powered Janus platelet cell robots for active and targeted drug delivery. (2020)	University of California San Diego, University of Science and Technology Beijing	China, United States	—
3	Lighting up Micro-/Nanorobots with Fluorescence. (2023)	Wuhan University of Technology	China	—
4	Intelligent Micro-/Nanorobots for Cancer Theragnostic. (2022)	Huazhong University of Science and Technology, University of California, Berkeley, University of California San Diego	P. R. China, United States	—
5	Magnesium-Based Micromotors as Hydrogen Generators for Precise Rheumatoid Arthritis Therapy. (2021)	Southern Medical University, Sun Yat-sen University	China	—
6	Nano/genetically engineered cells for immunotherapy (2024)	Soochow University	China	—
7	Recent Advances in Nano- and Micromotors (2020)	Aarhus University, Universidade de Vigo, University of Southampton	Denmark, Spain, 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 3

Claim — Contribution 3

The researcher pioneered a novel drug delivery system utilizing algae-based motors embedded in degradable capsules for targeted gastrointestinal tract administration.

The researcher established a foundational contribution to biomedical engineering through the 2022 publication titled 'Gastrointestinal tract drug delivery using algae motors embedded in a degradable capsule.' This work represents a distinct approach to targeted therapy within the digestive system. By integrating biological motility with synthetic degradable materials, the research appears to address challenges in precise drug localization and controlled release mechanisms that traditional passive delivery systems often fail to resolve. The combination of algae motors and degradable capsules suggests an innovative strategy to enhance therapeutic efficacy while minimizing systemic side effects. The significance of this contribution is evidenced by its substantial citation count of 164, indicating strong recognition within the scientific community. Furthermore, analysis of citing literature reveals that 96.8% of citations originate from independent researchers, demonstrating that the work has influenced a broad and diverse network of scholars beyond the researcher's immediate institution or collaboration circle. This high degree of independent uptake underscores the seminal nature of the findings and their utility to the wider field of drug delivery research.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9

CORE PAPER

Gastrointestinal tract drug delivery using algae motors embedded in a degradable capsule

2022 · 164 citations (GS)

Field-normalised: 129 Semantic Scholar citations place it in the top 1% of Medicine papers from 2022 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Imaging-guided bioresorbable acoustic hydrogel microrobots (2024)	California Institute of Technology, National University of Singapore, Santa Clara University	Singapore, United States	—
2	Technology Roadmap of Micro/Nanorobots (2025)	Aarhus University, Catalan Institute of Nanoscience and Nanotechnology (ICN2), Center for Molecular Bioengineering (B CUBE)	Canada, China, Czech Republic	—
3	Advanced materials for micro/nanorobotics (2024)	Central European Institute of Technology, CIC NanoGUNE BRTA, ETH Zürich	Czech Republic, Spain, Switzerland	—
4	Micro- and Nanomotors: Engineered Tools for Targeted and Efficient Biomedicine (2025)	Institute for Bioengineering of Catalonia, Barcelona Institute of Science and Technology, Korea Advanced Institute of Science and Technology (KAIST), University of California San Diego	South Korea, Spain, United States	—
5	Microorganism microneedle micro-engine depth drug delivery (2024)	Guangdong Second Provincial General Hospital, Harvard Uni-	China, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
		versity, Healthina Academy of Cellular Intelligence Manufacturing & Neurotrauma Repair of Tianjin Economic-Technological Development Area		
6	Synthetic and Biogenic Materials for Oral Delivery of Biologics: From Bench to Bedside. (2025)	Columbia University, University of Pennsylvania	United States	—
7	Biohybrid microrobots locally and actively deliver drug-loaded nanoparticles to inhibit the progression of lung metastasis. (2024)	University of California San Diego	United States	—
8	Biohybrid microrobots regulate colonic cytokines and the epithelium barrier in inflammatory bowel disease. (2024)	University of California San Diego	United States	—
9	Active microgel particle swarms for intrabronchial targeted delivery. (2025)	Cancer Hospital and Shenzhen Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Chinese PLA General Hospital First Medical Center, Chinese University of Hong Kong, Shenzhen	Canada, China	—

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 California San Diego	United States	SCImago #120 · THE 47 · QS 66	8
The Chinese University of Hong Kong	China	SCImago #163 · THE =41 · QS =32	4
ETH Zurich	Switzerland	THE 11 · QS 7	3
Shenzhen University	China	SCImago #229 · THE 351–400 · QS =452	3
Stanford University	United States	SCImago #18 · THE =5 · QS 3	2
Max Planck Institute for Dynamics and Self-Organization (MPI-DS)	Germany	—	2
Harbin Institute of Technology	China	SCImago #56 · THE =131 · QS 256	2
Fudan University	P. R. China	SCImago #46 · THE 36 · QS 30	2
California Institute of Technology	United States	SCImago #449 · THE 7 · QS 10	2
National University of Singapore	Singapore	SCImago #59 · THE 17 · QS 8	2
University of Toronto	Canada	SCImago #39 · THE 21 · QS 29	2
Santa Clara University	United States	SCImago #3657	2
Huazhong University of Science and Technology	P. R. China	SCImago #25 · THE =176 · QS 319	2

Institution	Country	World ranking	Citing papers
Aarhus University	Denmark	SCImago #293 · THE 101 · QS 131	2
Wuhan University of Technology	China	SCImago #405 · QS 951-1000	2

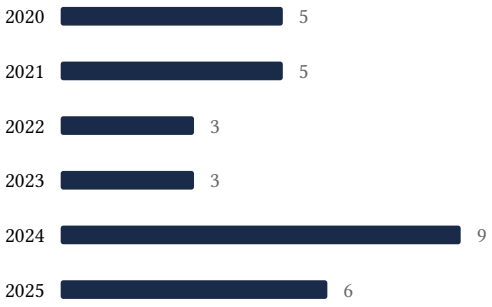
Geographic distribution of citing authors

Country	Citing papers
China	15
United States	15
Spain	5
Czech Republic	4
Switzerland	3
United Kingdom	3
Germany	3
P. R. China	2
Denmark	2
Canada	2
Singapore	2
South Korea	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).

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	Micromotor pills as a dynamic oral delivery platform	5	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 2	A macrophage–magnesium hybrid biomotor: fabrication and characterization	7	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 3	Gastrointestinal tract drug delivery using algae motors embedded in a degradable capsule	9	8 CFR 204.5(i)(3) — Outstanding Researcher