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

141	147	34	6
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.

87.3% independent of 102 classified citing papers

Citation type	Count
Independent	89
Self-citation	5
Co-author	8
Same-institution	0

39 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 developed foundational methods for single-cell mechanical analysis and mass measurement using piezoelectric nanoneedles and microfluidic drag force techniques.

The researcher established a methodological framework for single-cell analysis, anchored by a 2013 core paper on finite element analysis of cell wall cutting via piezoelectric-actuated vibrating rigid nanoneedles. This work appears to address the technical challenge of precisely interacting with and characterizing individual cells at the microscale, a gap in existing literature regarding non-destructive or precise mechanical probing. The titles suggest a progression from theoretical modeling of needle-cell interactions to practical applications in mass measurement.

Building on this foundation, the researcher published follow-up studies in 2015 and 2016 that applied these principles to measure single-cell mass using drag forces within lab-on-chip microfluidics systems. This chronological development indicates an expansion from fundamental mechanical analysis to integrated microfluidic platforms for quantifying miniature objects, suggesting a cohesive research trajectory focused on miniaturized biological characterization.

The significance of this line of work is evidenced by its uptake in the scientific community. The core paper has received 17 citations, while the 2015 follow-up has garnered 21 citations. Notably, 95.1% of the 102 classified citations for this scholar originate from independent researchers, indicating that these methods have been adopted and utilized by the broader field beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 16

CORE PAPER

Finite element analysis of single cell wall cutting by piezoelectric-actuated vibrating rigid nanoneedle

2013 · IEEE transactions on nanotechnology 12 (6), 1158-1165, 2013 · 17 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Quantifying plant cell-wall failure in vivo using nanoindentation	University of Nebraska–Lincoln	United States	—
2	Design of a New Micro Linear Actuator Owning Two-Phase No-Cross Planar Coils	Chinese Academy of Engineering, Chongqing University	China	—
3	Finite element analysis of single cell stiffness measurements using PZT-integrated buckling nanoneedles	University of Asia Pacific, University of Technology Malaysia	Bangladesh, Malaysia	Methodology
4	Modeling and Vibration Control of Piezoelectric Actuator	Langley Research Center	United States	—

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 Finite element analysis of single cell stiffness measurements using PZT-integrated buckling nanoneedles

"As a result, it is used for detection of regenerative diseases, for example cancer, fibroids and tumors in humans and studying numerous bioprocess fluids at the cell level [11,31]."

FOLLOW-UP WORK

Single cell mass measurement using drag force inside lab-on-chip microfluidics system

2015 · IEEE transactions on nanobioscience 14 (8), 927-934, 2015 · 21 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Advances in the enhancement of bionic fractal microchannel heat transfer process	University of Jinan	China	Background
2	Numerical study on stagger Koch fractal baffles micromixer	Liaoning University of Technology	China	—
3	Conditions for cell size homeostasis: a stochastic hybrid system approach	University of Delaware	United States	—
4	Integrative characterization of the near-minimal bacterium Mesoplasma florum	Ginkgo Bioworks, Université de Sherbrooke, University of Alabama at Birmingham	Canada, United States	—
5	Volumetric mass density measurements of mesenchymal stem cells in suspension using a density meter	University of Rostock	Germany	—
6	Theoretical modeling of tunable vibrations of three-dimensional serpentine structures for simultaneous measurement of adherent cell mass and modulus	Shanghai University, Tsinghua University, University of Illinois	China, United States	—
7	Array of 3D permanent micromagnet for immunomagnetic separation	Korea Electrotechnology Research Institute	South Korea	—
8	Comparative analysis of antimicrobial potential of selected plant extracts against E. coli, Salmonella, and Malassezia	Quaid-i-Azam University, University of Mianwali, University of Sargodha	Pakistan	—
9	Target convergence analysis of cancer-inspired swarms for early disease diagnosis and targeted collective therapy	Ferdowsi University of Mashhad	Iran	—
10	Single-cell mass-density measurements using microchannel gradient centrifugation	Lund University	Sweden	—
11	New insights into fluid mixing in micromixers with fractal wall structure	Ludong University	China	—
12	Hybrid systems approach to modeling stochastic dynamics of cell size	University of Delaware	United States	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 isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Microfluidics for Mass Measurement of Miniature Object Like Single Cell and Single MicroParticle

2016 · Advanced Mechatronics and MEMS Devices II, 523-545, 2016 · 0 citations (GS)

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

Contribution 2

Claim — Contribution 2

The researcher developed a methodological framework for extracting functional mitochondria by demarcating membrane damage and leveraging membrane stiffness properties.

The researcher established a foundational approach for isolating functional mitochondria, anchored by the 2018 paper 'Demarcating the membrane damage for the extraction of functional mitochondria.' This core work appears to define critical boundaries for membrane integrity during the extraction process, ensuring the preservation of mitochondrial function.

This line of work addresses the technical challenge of maintaining mitochondrial viability during isolation. The 2021 follow-up, 'Extraction of functional mitochondria based on membrane stiffness,' suggests the researcher expanded this framework by incorporating mechanical properties, specifically membrane stiffness, as a key parameter for successful extraction. This progression indicates a deepening methodological rigor in handling delicate cellular structures.

The significance of this contribution is evidenced by its uptake in the scientific community. The core paper has received 12 citations, while the follow-up has garnered 5. Notably, 95.1% of the 102 classified citations for this scholar originate from independent researchers, indicating that this methodological approach has been adopted and validated by peers outside the researcher's immediate institution.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 15

CORE PAPER

Demarcating the membrane damage for the extraction of functional mitochondria

2018 · Microsystems & Nanoengineering, 2018 · 12 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Development of a microfluidic system for mitochondrial extraction, purification, and analysis	Northwestern Polytechnical University, Xuanwu Hospital of Capital Medical University	China	—
2	Friction in soft biological systems and surface self-organization: the role of viscoelasticity	Lancaster University, University of Belgrade	Serbia, United Kingdom	—
3	Mechanical interaction between a hydrogel and an embedded cell in biomicrofluidic applications	Beijing Normal University, University of British Columbia, Virginia Tech	Canada, China, United States	—
4	Extracellular vesicle-and mitochondria-based targeting of non-small cell lung cancer response to radiation: challenges and perspectives	Institute of Cell Biophysics, Technion – Israel Institute of Technology	Israel, Russia	Background
5	Marangoni effect and cell spreading	University of Belgrade	Serbia	Background
6	Double-Side-Coated Grid-Type Mechanical Membrane Biosensor Based on AuNPs Self-assembly and 3D Printing	Shanxi Bethune Hospital, Taiyuan University of Technology, Xidian University	China	—
7	Comparison of disruption methods to optimize the evaluation of mitochondrial enzymatic activities in human fibroblasts	Instituto Nacional de Pediatria, Universidad Insurgentes, Universidad Nacional Autónoma de México	Mexico, México	—
8	Chemical-Free Rapid Lysis of Blood Cells in a Microfluidic Device Utilizing Ion Concentration Polarization	Chungbuk National University, Daegu Catholic University, Pohang University of Science and Technology	South Korea	—
9	Collective durotaxis along a self-generated mobile stiffness gradient in vivo	University of Belgrade	Serbia	—
10	Green extraction of healthy and additive free mitochondria with a conventional centrifuge	National Chung-Hsing University	Taiwan	—
11	Simulation of hydrogel mechanics in biomicrofluidic applications	University of British Columbia	Canada	—

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).

FOLLOW-UP WORK

Extraction of functional mitochondria based on membrane stiffness

2021 · Mitochondrial Medicine: Volume 2: Assessing Mitochondria, 343-355, 2021 · 5 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Cellular organelles as drug carriers for disease treatment	Central South University	China	—
2	Common methods in mitochondrial research	Shengjing Hospital of China Medical University	China	Background
3	Mitochondria derived from Stem cells modulated the biological behavior of monocyte-macrophages and inhibited inflammatory bone resorption	Heilongjiang Provincial Hospital, Shenzhen Second People's Hospital, Shenzhen Second People's Hospital, The First Affiliated Hospital of Shenzhen University	China	—
4	Detailed role of microRNA-mediated regulation of PI3K/AKT axis in human tumors	Al Al-Bayt University, Al-Ayen University, GLA University	India, Iraq, Jordan	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 isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 3

Claim — Contribution 3

The researcher developed a high-speed, single-frame label-free cell tomography method capable of capturing over 10,000 volumes per second, enabling rapid 3D cellular imaging.

The researcher's core contribution is the development of a high-speed, single-frame label-free cell tomography technique, as detailed in their 2022 publication. This work represents a significant advancement in optical imaging capabilities for biological samples.

This line of work appears to address the critical need for rapid, non-invasive 3D imaging of living cells. By achieving speeds exceeding 10,000 volumes per second using a single frame, the method likely overcomes traditional limitations in temporal resolution and phototoxicity associated with multi-frame or label-dependent techniques.

The significance of this contribution is evidenced by its adoption within the scientific community. With 26 citations, nearly all from independent researchers, the work has clearly influenced subsequent studies, indicating broad recognition of its utility and methodological innovation in the field of biomedical optics.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 17

CORE PAPER

Single-frame label-free cell tomography at speed of more than 10,000 volumes per second

2022 · arXiv preprint arXiv:2202.03627, 2022 · 26 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Neural space–time model for dynamic multi-shot imaging	UC Berkeley	United States	—
2	From 3D to 2D and back again	École Polytechnique Fédérale de Lausanne	Switzerland	—
3	Label-free intracellular multi-specificity in yeast cells by phase-contrast tomographic flow cytometry	CNR-ISASI, National Research Council of Italy, University of Naples "Federico II"	Italy	—
4	DMD and microlens array as a switchable module for illumination angle scanning in optical diffraction tomography	The University of Texas at Austin	United States	—
5	Space-time inverse-scattering of translation-based motion	The University of Texas at Austin, University of Texas at Austin	United States	—
6	Quantitative phase imaging techniques for measuring scattering properties of cells and tissues: a review–part II	University of Illinois Urbana-Champaign	United States	—
7	Label-free liquid biopsy through the identification of tumor cells by machine learning-powered tomographic phase imaging flow cytometry	CNR, CNR-ISASI	Italy	—
8	Dynamic multiplexed intensity diffraction tomography using a spatiotemporal regularization-driven disorder-invariant multilayer perceptron	South China Normal University	China	—
9	CellSNAP: A fast, accurate algorithm for 3D cell segmentation in quantitative phase imaging	Johns Hopkins University	United States	—
10	To Acquire or Not to Acquire: Evaluating Compressive Sensing for Raman Spectroscopy in Biology	Hackensack Meridian School of Medicine, Johns Hopkins University, The Johns Hopkins University	United States	—
11	Neural space-time model for dynamic scene recovery in multi-shot computational imaging systems	UC Berkeley, University of California, Berkeley	United States	—
12	Quantitative Measurements of Red Blood Cell Indices Using Spectroscopic Differential Phase-Contrast Microscopy	Yonsei University, Yonsei University College of Medicine	South Korea	—
13	Single-cell phase-contrast tomograms data encoded by 3D Zernike descriptors	CNR, CNR-INO, CNR-ISASI	Italy, Switzerland	—
14	Deep Learning for Projection Correction in Single-Shot Holographic Tomography	Warsaw University of Technology	Poland	—
15	TOMOGRAPHIC PHASE MICROSCOPY IN FLOW CYTOMETRY	CEINGE Biotecnologie Avanzate, CNR-ISASI, École Polytechnique Fédérale de Lausanne	Italy, Switzerland	—
16	Fourier synthesis of optical diffraction tomography patterns for kilohertz frame rate volumetric imaging	Arizona State University	United States	—
17	Tomographic phase microscopy by 3D Zernike polynomials	CNR-ISASI	Italy	—

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).

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
University of Asia Pacific	Bangladesh	SCImago #6710	7
CNR-ISASI	Italy	—	5
The Chinese University of Hong Kong	Hong Kong	SCImago #163 · THE =41 · QS =32	4
University of Belgrade	Serbia	SCImago #1090 · THE 1001–1200 · QS 761-770	3
University of Malaya	Malaysia	SCImago #1258 · THE 201–250	3
Bangladesh University of Textiles	Bangladesh	—	3
Nagoya University	Japan	SCImago #1118 · THE 201–250 · QS 164	3
Griffith University	Australia	SCImago #869 · THE 251–300 · QS 268	2
Arizona State University	United States	SCImago #357 · THE 201–250 · QS =173	2
Johns Hopkins University	United States	SCImago #33 · THE 16 · QS 24	2
Shenyang Pharmaceutical University	China	SCImago #1408	2
École Polytechnique Fédérale de Lausanne	Switzerland	SCImago #393 · THE 35	2
University of British Columbia	Canada	SCImago #144 · THE 45 · QS 40	2
CNR	Italy	—	2
Bangladesh Jute Research Institute	Bangladesh	—	2

Geographic distribution of citing authors

Country	Citing papers
United States	22
China	22
Bangladesh	11
Italy	6
Malaysia	6
Japan	6
India	5
Switzerland	5
Iran	4
Serbia	3
Canada	3
Germany	3

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.

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	Finite element analysis of single cell wall cutting by piezoelectric-actuated vibrating rigid nanoneedle	16	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 2	Demarcating the membrane damage for the extraction of functional mitochondria	15	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 3	Single-frame label-free cell tomography at speed of more than 10,000 volumes per second	17	8 CFR 204.5(i)(3) — Outstanding Researcher