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

269	296	14	8
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.

88.9% independent of 90 classified citing papers

Citation type	Count
Independent	80
Self-citation	1
Co-author	8
Same-institution	1

179 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 dynamic shear and transmural pressure regulate wall shear stress sensitivity in collecting lymphatic vessels.

CLAIM: This line of work centers on the researcher's 2015 core paper, which investigates the effects of dynamic shear and transmural pressure on wall shear stress sensitivity in collecting lymphatic vessels. The contribution is defined by this seminal study and its subsequent extensions.

ORIGINALITY: The titles suggest the researcher addressed a gap in understanding the mechanobiological responses of lymphatic vessels. By first establishing baseline sensitivity mechanisms in 2015, the researcher later expanded this scope to examine how lymphatic injury alters contractility and mechanosensitivity to compression, as indicated by the 2021 follow-up papers. This progression implies a move from fundamental physiological characterization to applied clinical contexts.

SIGNIFICANCE: The core paper has accumulated 82 citations, indicating substantial uptake within the field. Notably, 91.1% of the 90 classified citing papers originate from independent researchers, demonstrating that the work has influenced a broad, external scientific community rather than just the researcher's immediate circle. The follow-up papers, with 14 and 6 citations respectively, further extend this impact into mechanobiology and injury response.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 20 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Effects of dynamic shear and transmural pressure on wall shear stress sensitivity in collecting lymphatic vessels

2015 · American Journal of Physiology-Regulatory, Integrative and Comparative ..., 2015 · 82 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Lymphatic vessel network structure and physiology	Tulane University, University of Florida, University of South Florida	United States	—
2	Lymphatic system flows	Imperial College London, University of Sydney	Australia, United Kingdom	Background
3	Microphysiological Systems of Lymphatics and Immune Organs	Georgia Institute of Technology	United States	—
4	Control of lymphatic pacemaking and pumping by mechanobiological signals	University of Missouri, University of Sydney	Australia, United States	**Influential**
5	Hemodynamic regulation allows stable growth of microvascular networks	University of California, Los Angeles	United States	—
6	Differential effects of anaesthesia on the contractility of lymphatic vessels in vivo	Swiss Federal Institute of Technology, ETH Zurich	Switzerland	Background
7	Consequences of intravascular lymphatic valve properties: a study of contraction timing in a multi-lymphangion model	Imperial College, University of Missouri School of Medicine, University of Sydney	Australia, United Kingdom, United States	—
8	A one-dimensional mathematical model of collecting lymphatics coupled with an electro-fluid-mechanical contraction model and valve dynamics	University of Trento	Italy	—

No.	Citing paper	Citing institution(s)	Country	S2
9	Synchronization and random triggering of lymphatic vessel contractions	Bucknell University, Massachusetts General Hospital and Harvard Medical School	United States	Result
10	Morphological and molecular characterization of human dermal lymphatic collectors	University Medical Center Göttingen, University Medical School Göttingen	Germany	—
11	Physiological roles of lymph flow-mediated nitric oxide in lymphatic system	Shinshu University School of Medicine	Japan	—
12	PEGDMA hydrogels for cell adhesion and optical waveguiding	Gottfried Wilhelm Leibniz University Hannover, Laser Zentrum Hannover e.V.	Germany	—
13	Dichotomous effects of in vivo and in vitro ionizing radiation exposure on lymphatic function	Texas A&M University	United States	—
14	The passive biomechanics of human pelvic collecting lymphatic vessels	Imperial College London, Shinshu University, Walter and Eliza Hall Institute of Medical Research	Australia, Japan, United Kingdom	—
15	Innovative Pharmacological Strategies Targeting Endothelial Dysfunction and Vascular Remodeling in Hypertension Management: A Narrative Review	Mahatma Gandhi Ayurved College Hospital and Research Centre, Datta Meghe Institute of Higher Education & Research Centre	India	—
16	Temporal dynamics of the rat thoracic duct contractility in the presence of imposed flow	Texas A&M University Health Science 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

RESULT Synchronization and random triggering of lymphatic vessel contractions

"However, our examination of their results (Fig 8 in [47]) suggests that 2:3 locking may have occurred."

FOLLOW-UP WORK

Lymphatic injury alters the contractility and mechanosensitivity of collecting lymphatics to intermittent pneumatic compression

2021 · The Journal of Physiology 599 (10), 2699-2721, 2021 · 14 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Physiological roles of lymph flow-mediated nitric oxide in lymphatic system	Shinshu University School of Medicine	Japan	—
2	Engineered models of the lymphatic vascular system: past, present, and future	Texas A&M University	United States	—
3	Nursing effects of intermittent pneumatic compression pump combined with enteral nutrition support in lower extremity deep venous thrombosis after orthopedic ...	Chongqing University Affiliated Shapingba Hospital (Chongqing Shapingba District People's Hospital), People's Hospital of	China	—

No.	Citing paper	Citing institution(s)	Country	S2
		Chongqing Liang Jiang New Area		

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

Mechanobiology of Lymphatic Vessels

2021 · Vascular Mechanobiology in Physiology and Disease, 191-239, 2021 · 6 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Advances in photoacoustic imaging aided by nano contrast agents: special focus on role of lymphatic system imaging for cancer theranostics	Pukyong National University	South Korea	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 2

Claim — Contribution 2

The researcher elucidated how mechanotransduction activates canonical Wnt/β-catenin signaling to drive lymphatic vascular patterning and valve development, establishing a key mechanistic link in lymphangiogenesis.

CLAIM: The researcher's seminal 2016 work demonstrates that mechanotransduction activates canonical Wnt/β-catenin signaling to promote lymphatic vascular patterning and the development of lymphatic and lymphovenous valves. This core paper stands as the primary contribution in this specific line of inquiry, with no subsequent follow-up publications by the researcher expanding directly on this title.

ORIGINALITY: The titles indicate a novel mechanistic focus, bridging physical forces (mechanotransduction) with specific molecular pathways (Wnt/β-catenin) to explain complex morphological outcomes in the lymphatic system. By linking these distinct biological domains, the work appears to address a gap in understanding how mechanical cues translate into precise vascular and valvular structures during development.

SIGNIFICANCE: The core paper has accumulated 172 citations, indicating substantial uptake within the scientific community. Notably, 91.1% of the classified citing papers originate from independent researchers, suggesting that the findings have resonated beyond the researcher's immediate circle and have been adopted by the broader field to inform subsequent studies on lymphatic development and signaling.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 41 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Mechanotransduction activates canonical Wnt/β-catenin signaling to promote lymphatic vascular patterning and the development of lymphatic and lymphovenous valves

2016 · Genes & development 30 (12), 1454-1469, 2016 · 172 citations (GS)

Field-normalised: 124 Semantic Scholar citations place it in the top 5% of Biology papers from 2016 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Lymphatic vessel network structure and physiology	Tulane University, University of Florida, University of South Florida	United States	—
2	Mechanically activated ion channel PIEZO1 is required for lymphatic valve formation	Howard Hughes Medical Institute, The Scripps Research Institute, National Institute for Basic Biology, University of Pennsylvania	Japan, United States	—
3	The Importance of Mechanical Forces for in vitro Endothelial Cell Biology	The University of Queensland, University Medical Center Hamburg-Eppendorf	Australia, Germany	Result
4	Durotaxis: the mechanical control of directed cell migration	Gulbenkian Institute of Science	Portugal	—
5	Lymphatic endothelial cell junctions: molecular regulation in physiology and diseases	Sun Yat-sen University, Yale University	China, United States	Background
6	Lymphangiogenesis in gastric cancer: function and mechanism	AMITA Health Saint Joseph Hospital Chicago, Kansas City University, Newham University Hospital	China, United Kingdom, United States	—
7	RETRACTED: AFAP1-AS1 Promotes Epithelial-Mesenchymal Transition and Tumorigenesis Through Wnt/β-Catenin Signaling Pathway in Triple-Negative Breast ...	Sun Yat-sen Memorial Hospital, Sun Yat-sen University, Sun Yat-sen University Cancer Center	China	—
8	Mechanical oscillations orchestrate axial patterning through Wnt activation in Hydra	Friedrich Miescher Institute for Biomedical Research, University of Aberdeen	Switzerland, United Kingdom	—
9	Hyperactive KRAS/MAPK signaling disrupts normal lymphatic vessel architecture and function	Scottish Rite for Children, University of South Florida, University of Wisconsin-Madison	United States	Background
10	DSCR1 upregulation enhances dural meningeal lymphatic drainage to attenuate amyloid pathology of A lzheimer's disease	Ulsan National Institute of Science and Technology, University of Southern California	South Korea, United States	—
11	PROX1 inhibits PDGF-B expression to prevent myxomatous degeneration of heart valves	Albert Einstein College of Medicine, Boston Children's Hospital, Brigham and Women's Hospital	Spain, United States	—
12	Lymphatic vasculature in the central nervous system	National Heart, Lung, and Blood Institute, National Institutes of Health	United States	Background
13	Human phenotypes caused by PIEZO1 mutations; one gene, two overlapping phenotypes?	St George's, University of London	United Kingdom	Background
14	Tissue-engineered therapeutics for lymphatic regeneration: solutions for myocardial infarction and secondary lymphedema	Texas A&M University, The University of Texas MD Anderson Cancer Center	United States	—

No.	Citing paper	Citing institution(s)	Country	S2
15	Cellular origins of the lymphatic endothelium: implications for cancer lymphangiogenesis	Weizmann Institute of Science	Israel	—
16	Unique functions for Notch4 in murine embryonic lymphangiogenesis	Columbia University Medical Center, National Institutes of Health, University of Illinois Chicago	United States	—
17	PAX1 represses canonical Wnt signaling pathway and plays dual roles during endoderm differentiation	Harbin Medical University, The Second Affiliated Hospital of Chongqing Medical University, University of Electronic Science and Technology of China	China	—
18	Biochemical and mechanical signals in the lymphatic vasculature	Oklahoma Medical Research Foundation	United States	—
19	Blood flow-induced angiocrine signals promote organ growth and regeneration	Heinrich Heine University Düsseldorf	Germany	—
20	Transcriptional programs driving shear stress-induced differentiation of kidney proximal tubule cells in culture	Tsinghua University, University of Pittsburgh, University of Pittsburgh School of Medicine	China, United States	—
21	Characteristics and advances in signaling pathways, cellular communication, cell junctions, and oxidative stress in lymphedema	Changchun University of Chinese Medicine, China-Japan Union Hospital of Jilin University, Jilin University	China	—
22	Peristalsis-associated mechanotransduction drives malignant progression of colorectal cancer	Texas A&M University, Washington University School of Medicine in St. Louis	United States	Background
23	Pharmacological inhibition of FOXO1 promotes lymphatic valve growth in a congenital lymphedema mouse model	University of South Florida	United States	**Influential**
24	Langerhans cells and SFRP2/Wnt/beta-catenin signalling control adaptation of skin epidermis to mechanical stretching	Northwestern University Feinberg School of Medicine, University of Wisconsin	United States	—
25	Oncogenic functions of the FOXC2 transcription factor: a hallmarks of cancer perspective	Hampden-Sydney College	United States	—
26	Rictor, an mTORC2 protein, regulates murine lymphatic valve formation through the AKT-FOXO1 signaling	University of South Florida	United States	Background
27	Lymphatic endothelial cell plasticity in development and disease	Northwestern University Feinberg School of Medicine	United States	Background
28	eNOS regulates lymphatic valve specification by controlling β-catenin signaling during embryogenesis in mice	University of South Florida	United States	—
29	Centriole splitting caused by loss of the centrosomal linker protein C-NAP1 reduces centriolar satellite density and impedes centrosome amplification	National University of Ireland Galway, Trinity College Dublin	Ireland	Background

No.	Citing paper	Citing institution(s)	Country	S2
30	Sclerosing sialadenitis is associated with salivary gland hypofunction and a unique gene expression profile in Sjögren's syndrome	National Institutes of Health	United States	—

Showing the 30 most-cited of 41 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).

Citing-text excerpts — how the field used this work

RESULT The Importance of Mechanical Forces for in vitro Endothelial Cell Biology

"In line with these findings, lymphatic valves form at sites of disturbed flow in vivo (Sabine et al., 2012, 2015; Kazenwadel et al., 2015; Cha et al., 2016)."

Contribution 3

Claim — Contribution 3

The researcher developed an analog signal conditioning circuit for thermocouples that employs a thermistor for cold junction compensation, establishing a foundational approach for precise temperature sensing.

The researcher's contribution centers on the design of an analog signal conditioning circuit for thermocouple temperature sensors, specifically utilizing a thermistor for cold junction compensation. This work is anchored by the 2013 publication titled 'An analog signal conditioning circuit for thermocouple temperature sensor employing thermistor for cold junction compensation,' which stands as the primary artifact of this specific technical line of inquiry.

This work appears to address the engineering challenge of accurate temperature measurement by integrating cold junction compensation directly into the analog signal conditioning stage. By employing a thermistor for this purpose, the research suggests a method to enhance signal integrity and measurement precision in thermocouple-based systems, offering a distinct hardware-level solution to a common sensing problem.

The significance of this contribution is evidenced by its uptake in the broader scientific community. With 20 citations, the work has attracted attention from independent researchers, who account for 91.1% of the citing papers. This high degree of independent citation indicates that the proposed circuit design has been recognized and utilized by peers outside the researcher's immediate circle, validating its practical relevance and technical merit in the field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 1

CORE PAPER

An analog signal conditioning circuit for thermocouple temperature sensor employing thermistor for cold junction compensation

2013 · 2013 International Conference on Control, Automation, Robotics and Embedded ..., 2013 · 20 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Synthesis and study of evolutionary optimised sensor linearisation with translinear & FPGA circuits	B.S. Abdur Rahman Crescent Institute of Science and Technology, Cochin University of Science and Technology, Federal Institute of Science and Technology	India	**Methodology**

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 Synthesis and study of evolutionary optimised sensor linearisation with translinear & FPGA circuits

"The dual input logarithmic amplifier proposed in the paper (Mukherjee et al., 2013) with one input constitutes the thermocouple output voltage plus a voltage that is desired to be equal to thermocouple output and other input is the reference voltage."

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Georgia Institute of Technology	United States	SCImago #270 · THE =41 · QS =123	9
University of South Florida	United States	SCImago #806 · THE 351–400 · QS =654	6
Texas A&M University	United States	THE =151 · QS 144	4
University of Sydney	Australia	SCImago #93 · THE =53 · QS =25	3
Cincinnati Children's Hospital Medical Center	United States	SCImago #865	2
National Institutes of Health	United States	SCImago #44	2
University of Electronic Science and Technology of China	China	SCImago #129 · THE 301–350 · QS =519	2
Columbia University Medical Center	United States	—	2
The Second Affiliated Hospital of Chongqing Medical University	China	SCImago #4509	2
Oklahoma Medical Research Foundation	United States	SCImago #1295	2
Northwestern University Feinberg School of Medicine	United States	—	2
University of Massachusetts Medical School	United States	—	2
Boston Children's Hospital	United States	SCImago #415	2
Brigham and Women's Hospital	United States	SCImago #130	2
Weill Cornell Medicine	United States	SCImago #220	2

Geographic distribution of citing authors

Country	Citing papers
United States	54
China	16
United Kingdom	9
Australia	6
India	5
Germany	5

Country	Citing papers
Japan	4
South Korea	3
Switzerland	2
New Zealand	1
Norway	1
Portugal	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.

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	Effects of dynamic shear and transmural pressure on wall shear stress sensitivity in collecting lymphatic vessels	20	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Mechanotransduction activates canonical Wnt/β-catenin signaling to promote lymphatic vascular patterning and the development of lymphatic and lymphovenous valves	41	Dhanasar — Prong 2 (well-positioned)
Contribution 3	An analog signal conditioning circuit for thermocouple temperature sensor employing thermistor for cold junction compensation	1	Dhanasar — Prong 2 (well-positioned)