Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

Hans Clevers

Professor in Molecular Genetics. Utrecht University, Hubrecht Institute & Princess Maxima Center.

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

13	15	3	266
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 10 classified citing papers

Citation type	Count
Independent	10
Self-citation	0
Co-author	0
Same-institution	0

3 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 produced a seminal, highly cited synthesis on Wnt/beta-catenin signaling in development and disease, establishing a foundational reference for the field.

The researcher's contribution centers on a core paper titled 'Wnt/β-catenin signaling in development and disease,' published in 2006. This work serves as the primary anchor for this line of inquiry, with no follow-up papers by the same researcher provided in the current dataset. The titles indicate a comprehensive review or analysis of this critical signaling pathway, addressing its dual roles in physiological development and pathological disease states. By consolidating knowledge on Wnt/β-catenin, the work appears to have filled a need for a unified framework to understand these complex biological mechanisms. The significance of this contribution is evidenced by its substantial citation count of 7,417, suggesting it has become a standard reference in the field. Furthermore, analysis of citing papers reveals that 100% of the classified citations originate from independent researchers, indicating broad adoption and impact beyond the researcher's immediate institutional or collaborative network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 3

CORE PAPER

Wnt/β-catenin signaling in development and disease

2006 · 7,417 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Chromatin Potential Identified by Shared Single-Cell Profiling of RNA and Chromatin	Broad Institute of MIT and Harvard, Harvard University, Icahn School of Medicine at Mount Sinai	United States	—
2	Wnt/β-catenin signalling: function, biological mechanisms, and therapeutic opportunities (2022)	Central South University	China	—
3	Mechanistic insights into Wnt–β-catenin pathway activation and signal transduction (2025)	University of Toronto	Canada	—

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 demonstrated that single Lgr5 stem cells can autonomously build crypt-villus structures in vitro without a mesenchymal niche, fundamentally advancing intestinal stem cell biology.

The researcher's seminal contribution rests on a 2009 Nature paper titled 'Single Lgr5 stem cells build crypt-villus structures in vitro without a mesenchymal niche.' This work appears to establish that individual stem cells possess the intrinsic capacity to organize complex tissue architectures independently of traditional supportive niches.

This line of work addresses a critical gap in understanding tissue regeneration by challenging the prevailing assumption that a mesenchymal niche is strictly required for crypt-villus formation. By isolating the role of single Lgr5 cells, the research suggests a new paradigm for how intestinal structures self-organize, offering a simplified model for studying stem cell behavior.

The significance of this contribution is evidenced by its substantial citation count of 8,615, indicating widespread adoption and influence within the scientific community. Furthermore, analysis of citing papers reveals that 100% of the classified citations originate from independent researchers, underscoring the work's broad impact beyond the researcher's immediate institutional circle and confirming its status as a foundational reference in the field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 4

CORE PAPER

Single Lgr5 stem cells build crypt-villus structures in vitro without a mesenchymal niche

2009 · Nature · 8,615 citations (GS)

Field-normalised: 6,552 Semantic Scholar citations place it in the top 1% of Biology papers from 2009 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Nanoparticles-induced potential toxicity on human health: applications, toxicity mechanisms, and evaluation models (2023)	Beijing Institute of Radiation Medicine, Central South University, Silesian University of Technology	China, Poland	—
2	The role of goblet cells and mucus in intestinal homeostasis (2022)	University of Gothenburg	Sweden	—
3	Mechanisms of metastatic colorectal cancer (2024)	Institute for Research in Biomedicine (IRB Barcelona), The Barcelona Institute of Science and Technology (BIST), IRB Barcelona, The Barcelona Institute of Science and Technology	Spain	—
4	Organoids (2022)	Chinese Academy of Sciences, Hangzhou Institute for Advanced Study, Chinese Academy of Sciences, Iowa State University	China, Germany, Singapore	—

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 identified Lgr5 as a definitive marker for intestinal stem cells, establishing a foundational framework for understanding gut tissue regeneration and homeostasis.

CLAIM: The researcher's seminal 2007 paper, titled 'Identification of stem cells in small intestine and colon by marker gene Lgr5,' serves as the core contribution of this line of work. This publication appears to have established Lgr5 as a critical identifier for stem cells within the intestinal tract, providing a specific molecular tool for the field.

ORIGINALITY: By focusing on the marker gene Lgr5, this work appears to address the challenge of precisely locating and characterizing stem cells in the small intestine and colon. The title suggests a shift toward using specific genetic markers to define cell identity, offering a novel approach to studying intestinal biology that distinguishes these cells from other tissue types.

SIGNIFICANCE: With over 7,000 citations, this paper is highly influential, indicating widespread adoption of its findings. Notably, 100% of the classified citing papers originate from independent researchers, demonstrating that the scientific community broadly recognizes and builds upon this work outside the researcher's immediate circle, underscoring its independent impact.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 5

CORE PAPER

Identification of stem cells in small intestine and colon by marker gene Lgr5

2007 · 7,103 citations (GS)

Field-normalised: 5,622 Semantic Scholar citations place it in the top 1% of Biology papers from 2007 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Metastatic colorectal cancer: mechanisms and emerging therapeutics (2023)	Columbia University, Columbia University Irving Medical Center	United States	—
2	Wnt/β-catenin signalling: function, biological mechanisms, and therapeutic opportunities (2022)	Central South University	China	—
3	Mechanisms of metastatic colorectal cancer (2024)	Institute for Research in Biomedicine (IRB Barcelona), The Barcelona Institute of Science and Technology (BIST), IRB Barcelona, The Barcelona Institute of Science and Technology	Spain	—
4	High-plex imaging of RNA and proteins at subcellular resolution in fixed tissue by spatial molecular imaging	Dxome Co., NanoString Technologies	South Korea, United States	—
5	Taurine deficiency as a driver of aging	—	—	—

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
Central South University	China	SCImago #42 · THE 251–300 · QS =491	2
University of Chinese Academy of Sciences	China	SCImago #5 · QS =362	1
Dxome Co.	South Korea	—	1
National University of Singapore	Singapore	SCImago #59 · THE 17 · QS 8	1
Chinese Academy of Sciences	China	SCImago #2	1
Yong Loo Lin School of Medicine	Singapore	—	1

Institution	Country	World ranking	Citing papers
University of Gothenburg	Sweden	SCImago #573 · THE 201–250 · QS 202	1
University of California Los Angeles	United States	SCImago #70 · THE =18 · QS 46	1
Max Planck Institute of Molecular Cell Biology and Genetics	Germany	SCImago #951	1
Columbia University	United States	SCImago #65 · THE 20 · QS =38	1
Broad Institute of MIT and Harvard	United States	SCImago #112	1
Beijing Institute of Radiation Medicine	China	—	1
Harvard University	United States	SCImago #4 · THE =5 · QS 5	1
University of California, Los Angeles	United States	SCImago #70 · THE =18 · QS 46	1
Silesian University of Technology	Poland	SCImago #2757 · THE 1001–1200 · QS 1001-1200	1

Geographic distribution of citing authors

Country	Citing papers
United States	4
China	3
Poland	1
Canada	1
South Korea	1
Spain	1
Sweden	1
Singapore	1
Germany	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).

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	Wnt/β-catenin signaling in development and disease	3	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Single Lgr5 stem cells build crypt-villus structures in vitro without a mesenchymal niche	4	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Identification of stem cells in small intestine and colon by marker gene Lgr5	5	Dhanasar — Prong 2 (well-positioned)