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

305	315	11	4
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.

92.5% independent of 253 classified citing papers

Citation type	Count
Independent	234
Self-citation	0
Co-author	16
Same-institution	3

52 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 framework linking circadian rhythms to fatty liver disease pathogenesis and treatment, subsequently expanding this scope to include intestinal transgene delivery mechanisms for persistent physiological changes.

CLAIM: The researcher's contribution centers on a seminal 2020 paper titled 'Circadian rhythms in the pathogenesis and treatment of fatty liver disease,' which has garnered 193 citations. This core work is complemented by a 2022 follow-up study on intestinal transgene delivery using native E. coli chassis, which has accumulated 155 citations.

ORIGINALITY: This line of work appears to address the intersection of metabolic disorders and biological timing, suggesting a novel approach to understanding fatty liver disease through the lens of circadian biology. The subsequent 2022 paper indicates an expansion of this research trajectory, exploring how native bacterial chassis can facilitate persistent physiological changes, thereby broadening the methodological scope from observational pathogenesis to potential therapeutic delivery mechanisms.

SIGNIFICANCE: The impact of this research is evidenced by the high citation counts of both papers. Furthermore, analysis of 253 citing papers reveals that 92.5% originate from independent researchers, indicating that the scientific community widely recognizes and builds upon these findings beyond the researcher's immediate institutional circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 221 · **8 flagged influential by Semantic Scholar**

CORE PAPER

Circadian rhythms in the pathogenesis and treatment of fatty liver disease

2020 · Gastroenterology 158 (7), 1948-1966. e1, 2020 · 193 citations (GS)

Field-normalised: 145 Semantic Scholar citations place it in the top 5% of Medicine papers from 2020 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	The Interconnection between Hepatic Insulin Resistance and Metabolic Dysfunction-Associated Steatotic Liver Disease—The Transition from an Adipocentric to Liver-Centric Approach (2023)	University of Belgrade	Serbia	—
2	Gut-liver axis: Pathophysiological concepts and clinical implications (2022)	Medical University of Innsbruck, Medical University, Vienna	Austria	—
3	Obesity I: Overview and molecular and biochemical mechanisms (2022)	Australian National University, East Carolina University, Healthy Environment and Endocrine Disruptor Strategies	Australia, Czech Republic, France	—
4	Timing of energy intake and the therapeutic potential of intermittent fasting and time-restricted eating in NAFLD (2023)	University of Oxford	United Kingdom	—
5	Fasting: From Physiology to Pathology. (2023)	Chengdu University of Traditional Chinese Medicine, Sichuan University, West China Hospital, West China Hospital, Sichuan University	China	—

No.	Citing paper	Citing institution(s)	Country	S2
6	Activation of Kupffer cells in NAFLD and NASH: mechanisms and therapeutic interventions. (2023)	Nanjing First Hospital, Nanjing Medical University	China	—
7	Diet and exercise in NAFLD/NASH: Beyond the obvious. (2021)	General Hospital Oberndorf, Medical University of Vienna	Austria	—
8	Resynchronized rhythmic oscillations of gut microbiota drive time-restricted feeding induced nonalcoholic steatohepatitis alleviation. (2023)	Sir Run Run Shaw Hospital, Zhejiang University School of Medicine, Zhejiang University	China	—
9	Hepatic sexual dimorphism—implications for non-alcoholic fatty liver disease (2021)	Université Lille	France	—
10	Peroxisome Proliferator-Activated Receptors and Their Novel Ligands as Candidates for the Treatment of Non-Alcoholic Fatty Liver Disease (2020)	Institut National de la Recherche Agronomique, Institut National de la Santé et de la Recherche Médicale, Université de Lausanne	France, Switzerland	—
11	PPAR-Targeted Therapies in the Treatment of Non-Alcoholic Fatty Liver Disease in Diabetic Patients (2022)	Inselspital, Bern University Hospital, Université Claude Bernard Lyon 1, University of Bern	France, Switzerland	—
12	Non-alcoholic fatty liver disease (NAFLD) and mental illness: Mechanisms linking mood, metabolism and medicines. (2022)	University of New England	United States	—
13	Circadian regulation of liver metabolism: experimental approaches in human, rodent, and cellular models. (2023)	Oxford Centre for Diabetes, Endocrinology and Metabolism	United Kingdom	—
14	Bile acid metabolism and circadian rhythms. (2020)	Nanjing University of Science and Technology	China	—
15	Chrononutrition: Potential, Challenges, and Application in Managing Obesity (2025)	Soonchunhyang University	South Korea	—
16	The Gut Microbiome and Ferroptosis in MAFLD (2023)	Putuo People's Hospital, Tongji University School of Medicine, Shanghai Tongren Hospital, Shanghai Jiaotong University School of Medicine	China	—
17	Reprogramming of rhythmic liver metabolism by intestinal clock (2023)	Guangzhou University of Chinese Medicine, Shenzhen People's Hospital, The First Affiliated Hospital of Zhengzhou University	China	—
18	Association between physical frailty, circadian syndrome and cardiovascular disease among middle-aged and older adults: a longitudinal study. (2024)	Hubei University of Chinese Medicine	China	—
19	The circadian rhythm: an influential soundtrack in the diabetes story. (2023)	Dana Farber Cancer Institute, Isfahan University of Medical Sciences, Istinye University	Canada, India, Iran	—
20	Eating, diet, and nutrition for the treatment of non-alcoholic fatty liver disease (2023)	General Hospital Oberndorf, Teaching Hospital of the Paracelsus Medical University	Austria	—

No.	Citing paper	Citing institution(s)	Country	S2
		Salzburg, Medical University of Vienna		
21	Pu-erh Tea Restored Circadian Rhythm Disruption by Regulating Tryptophan Metabolism. (2022)	Chongqing Medical University, Cornell University, Hunan Agricultural University	China, United States	—
22	Chronic jet lag alters gut microbiome and mycobiome and promotes the progression of MAFLD in HFHFD-fed mice. (2023)	University of Texas Rio Grande Valley, Xiangya Hospital, Central South University	China, United States	—
23	Berberine Effects in Pre-Fibrotic Stages of Non-Alcoholic Fatty Liver Disease—Clinical and Pre-Clinical Overview and Systematic Review of the Literature (2024)	Carol Davila University of Medicine and Pharmacy, Dr. Carol Davila Central Military Emergency University Hospital	Romania	—
24	Bile acid receptors and signaling crosstalk in the liver, gut and brain (2021)	Northeast Ohio Medical University	United States	—
25	Obesity, Chronic Stress, and Stress Reduction (2023)	San Diego State University/University of California, San Diego Joint Doctoral Program, UC San Diego, VA San Diego	United States	—
26	Timing Matters: Late, but Not Early, Exercise Training Ameliorates MASLD in Part by Modulating the Gut-Liver Axis in Mice. (2024)	Leiden University Medical Center	Netherlands	—
27	Tick Tock, the Cartilage Clock (2023)	University of Manchester	United Kingdom	—
28	The Impact of Toll-Like Receptor 5 on Liver Function in Age-Related Metabolic Disorders. (2025)	Chonnam National University, Chonnam National University Medical School, Konkuk University School of Medicine	South Korea	—
29	Intermittent fasting and metabolic dysfunction-associated steatotic liver disease: the potential role of the gut-liver axis. (2025)	The Chinese University of Hong Kong	China, Hong Kong	—
30	Restoring the dampened expression of the core clock molecule BMAL1 protects against compression-induced intervertebral disc degeneration (2022)	Fourth Military Medical University, University of Manchester	China, United Kingdom	—

Showing the 30 most-cited of 127 independent citing papers.

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.

FOLLOW-UP WORK

Intestinal transgene delivery with native E. coli chassis allows persistent physiological changes

2022 · Cell 185 (17), 3263-3277. e15, 2022 · 155 citations (GS)

Field-normalised: 120 Semantic Scholar citations place it in the top 5% of Medicine papers from 2022 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	The gut–liver axis and gut microbiota in health and liver disease (2023)	University of California San Diego	United States	—

No.	Citing paper	Citing institution(s)	Country	S2
2	Utilization of the microbiome in personalized medicine (2023)	Weizmann Institute of Science	Israel	—
3	Soft robot-enabled controlled release of oral drug formulations (2023)	Zhejiang University	China	—
4	Obesity, Chronic Stress, and Stress Reduction	San Diego State University/University of California, San Diego Joint Doctoral Program, UC San Diego, VA San Diego	United States	—
5	Intermittent fasting and metabolic dysfunction-associated steatotic liver disease: the potential role of the gut-liver axis.	The Chinese University of Hong Kong	China, Hong Kong	—
6	Dietary Polyphenols in Metabolic Diseases: Roles of Gut Microbiota-Derived Metabolites.	Chengdu University of Traditional Chinese Medicine	China	—
7	Exploiting bacteria for cancer immunotherapy (2024)	Chonnam National University Medical School, Chonnam National University Medical School and Hwasun Hospital, CNCure Biotech	South Korea, Vietnam	—
8	Engineering tumor-colonizing E. coli Nissle 1917 for detection and treatment of colorectal neoplasia (2024)	Cancer Voices SA, Columbia University, Flinders University	Australia, United States	—
9	Longitudinal profiling of the microbiome at four body sites reveals core stability and individualized dynamics during health and disease (2024)	—	—	—
10	Bile salt hydrolases shape the bile acid landscape and restrict Clostridioides difficile growth in the murine gut (2023)	North Carolina State University, University of California San Diego, University of North Carolina at Chapel Hill	United States	—
11	Bacterial therapies at the interface of synthetic biology and nanomedicine (2023)	Columbia University	United States	—
12	Engineering the gut microbiome (2023)	Heidelberg University, Jinan University, Sun Yat-sen University	China, Germany, United States	—
13	Microbiota-mediated mechanisms of mucosal immunity across the lifespan (2025)	Weill Cornell Medicine, Cornell University	United States	—
14	Precision microbiota therapy for IBD: premise and promise (2025)	Weill Cornell Medicine	United States	—
15	The gut microbiota: an emerging modulator of drug resistance in hepatocellular carcinoma. (2025)	Changzheng Hospital, Naval Medical University, Naval Medical University	China	—
16	Genetic Engineering of Resident Bacteria in the Gut Microbiome. (2023)	University of Chicago	United States	—
17	Microbiota-immune-brain interactions: A lifespan perspective (2023)	University College Cork	Ireland	—
18	Evidence for the contribution of the gut microbiome to obesity and its reversal. (2023)	Amsterdam UMC Location University of Amsterdam	Netherlands	—

No.	Citing paper	Citing institution(s)	Country	S2
19	Role of Gut Microbial Metabolites in Cardiovascular Diseases—Current Insights and the Road Ahead (2024)	—	—	—
20	Engineered Bacteria for Disease Diagnosis and Treatment Using Synthetic Biology. (2025)	Shanghai University	China	—
21	Metagenomic editing of commensal bacteria in vivo using CRISPR-associated transposases. (2025)	Columbia University	United States	—
22	Macroencapsulated bacteria for in vivo sensing and therapeutics (2024)	Massachusetts Institute of Technology, The University of Texas Southwestern Medical Center, Zhejiang University	China, United States	—
23	Systems and synthetic biology-driven engineering of live bacterial therapeutics. (2023)	Korea Advanced Institute of Science and Technology	South Korea	—
24	Impact of Fecal Microbiota Transplantation on Gut Bacterial Bile Acid Metabolism in Humans (2022)	Brigham and Women's Hospital, Imperial College London, The George Washington University	United Kingdom, United States	—
25	Engineered bacteria: Strategies and applications in cancer immunotherapy (2024)	Peking University, Peking University Shenzhen Hospital	China	—
26	Genetically engineered bacteria as inflammatory bowel disease therapeutics (2024)	East China University of Science and Technology	China	—
27	Microbiome engineering: engineered live biotherapeutic products for treating human disease. (2022)	University College London	United Kingdom	—
28	Gut microbiome and metabolites, the future direction of diagnosis and treatment of atherosclerosis? (2022)	Peking University	China	—
29	Regulation of gut microbiota-bile acids axis by probiotics in inflammatory bowel disease. (2022)	Tianjin Medical University General Hospital	China	—
30	Decoding the microbiome: advances in genetic manipulation for gut bacteria (2023)	Fudan University Shanghai Cancer Center, Institut Pasteur of Shanghai, University of Chicago	China, United States	—

Showing the 30 most-cited of 94 independent citing papers.

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 elucidated the molecular mechanism linking JMJD5 to CRY1 function and proteasomal degradation, establishing a critical regulatory pathway in circadian biology.

The researcher's core contribution centers on the 2018 paper titled 'JMJD5 links CRY1 function and proteasomal degradation.' This work appears to define a specific molecular interaction, suggesting that JMJD5 plays a direct role in modulating CRY1

activity through the proteasomal system. As the sole publication in this specific line of inquiry presented here, it stands as a distinct and self-contained scientific claim.

This line of work addresses the mechanistic gap regarding how CRY1, a key circadian clock component, is regulated at the post-translational level. By identifying JMJD5 as a linker to proteasomal degradation, the research offers a novel perspective on the stability and function of circadian proteins. The absence of follow-up papers in this dataset suggests this finding represents a discrete, foundational insight rather than an extended series of incremental studies.

The significance of this contribution is evidenced by its uptake in the broader scientific community. With 18 citations, the work has attracted attention from independent researchers, who account for 92.5% of the citing literature. This high degree of independence indicates that the finding has been recognized and utilized by external scholars, validating its relevance to the field beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 13

CORE PAPER

JMJD5 links CRY1 function and proteasomal degradation

2018 · PLoS biology 16 (11), e2006145, 2018 · 18 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Molecular mechanisms and physiological importance of circadian rhythms (2019)	The Rockefeller University	United States	—
2	Circadian rhythm regulates the function of immune cells and participates in the development of tumors (2024)	Air Force Medical University, Northwest University	China	—
3	Histone methylation: at the crossroad between circadian rhythms in transcription and metabolism. (2024)	Universidad Nacional Autónoma de México	Mexico	—
4	JMJD5 inhibits lung cancer progression by facilitating EGFR proteasomal degradation (2023)	The Second Affiliated Hospital, Zhejiang University School of Medicine, Zhejiang University School of Medicine	China	—
5	Arabidopsis JMJD5/JMJ30 Acts Independently of LUX ARRHYTHMO Within the Plant Circadian Clock to Enable Temperature Compensation. (2019)	Michigan State University, Tokyo University of Science, University of California, Davis	Japan, United Kingdom, United States	—
6	5-Substituted Pyridine-2,4-dicarboxylate Derivatives Have Potential for Selective Inhibition of Human Jumonji-C Domain-Containing Protein 5. (2023)	University of Birmingham, University of Oxford	United Kingdom	—
7	Kinetic and inhibition studies on human Jumonji-C (JmjC) domain-containing protein 5 (2023)	University of Oxford	United Kingdom	—
8	MAPK Is a Mutual Pathway Targeted by Anxiety-Related miRNAs, and E2F5 Is a Putative Target for Anxiolytic miRNAs (2023)	RWTH Aachen University, Tabriz University of Medical Sciences	Germany, Iran	—
9	JMJD5 inhibits lung cancer progression by regulating glucose metabolism through the p53/TIGAR pathway. (2023)	Second Affiliated Hospital, Zhejiang University School of Medicine, The Second Affiliated Hospital, Zhejiang University	China	—

No.	Citing paper	Citing institution(s)	Country	S2
		School of Medicine, Zhejiang University School of Medicine		
10	The Novel Protease Activities of JMJD5–JMJD6–JMJD7 and Arginine Methylation Activities of Arginine Methyltransferases Are Likely Coupled (2022)	—	—	—
11	Investigating Electrophysiological Changes in Blood Cells Using Dielectrophoresis (2021)	University of Surrey	United Kingdom	—
12	MAPK Is a Mutual Pathway Targeted by Anxiety-Related miRNAs, and E2F5 Is a Putative Target for Anxiolytic miRNAs. (2023)	North Khorasan University of Medical Sciences, RWTH University Hospital Aachen, University of Basel	Germany, Iran, Switzerland	—
13	Kinetic and inhibition studies on human Jumonji-C (JmjC) domain-containing protein 5 (2023)	University of Oxford	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.

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	13
University of California San Diego	United States	SCImago #120 · THE 47 · QS 66	8
University of Oxford	United Kingdom	SCImago #26 · THE 1 · QS 4	8
Columbia University	United States	SCImago #65 · THE 20 · QS =38	4
Jiangnan University	China	SCImago #348 · THE 601–800 · QS 851-900	4
University of Florida	United States	SCImago #166 · THE =134 · QS =212	4
Ningbo University	China	SCImago #1212	4
The University of Hong Kong	China	SCImago #195 · THE 33 · QS 11	4
University of California	United States	—	3
Massachusetts General Hospital	United States	SCImago #100	3
University of Stirling	United Kingdom	SCImago #2876 · THE 501–600 · QS =517	3
Weill Cornell Medicine	United States	SCImago #220	3
East China University of Science and Technology	PR China	SCImago #994 · THE 601–800 · QS =673	3
Hainan University	China	SCImago #1094	3
Chongqing Medical University	China	SCImago #1049	3

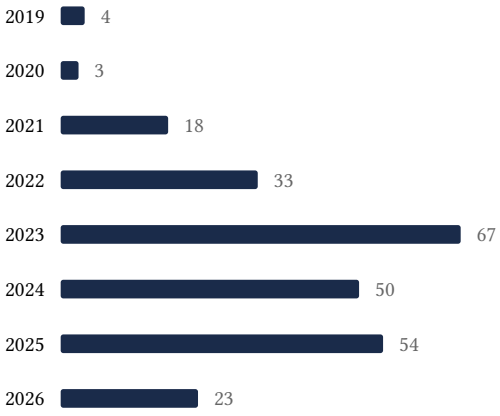
Geographic distribution of citing authors

Country	Citing papers
China	94
United States	76
United Kingdom	23
Germany	9
South Korea	8
France	7
India	7
Italy	5
Australia	5
Switzerland	4
Japan	4
Israel	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.

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	Circadian rhythms in the pathogenesis and treatment of fatty liver disease	221	Dhanasar — Prong 2 (well-positioned)
Contribution 2	JMJD5 links CRY1 function and proteasomal degradation	13	Dhanasar — Prong 2 (well-positioned)