

# Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

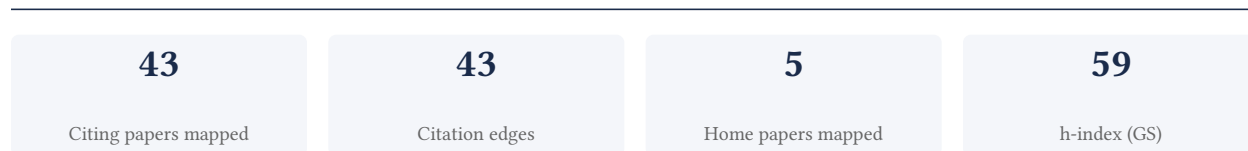
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[Google Scholar profile](#)

**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



### 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.

**86.0% independent** of 43 classified citing papers

Citation type	Count
Independent	37
Self-citation	1
Co-author	5
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 a strong association between de novo mutations and autism using whole-exome sequencing, a finding supported by nearly 2,600 citations.*

The researcher's core contribution rests on a 2012 study demonstrating that de novo mutations revealed by whole-exome sequencing are strongly associated with autism. This work stands as a singular, foundational piece in this specific line of inquiry, with no follow-up papers by the same author listed in the provided data.

This line of work appears to address the genetic underpinnings of autism by leveraging whole-exome sequencing to identify de novo mutations. The title suggests a novel application of this sequencing technology to establish a clear link between these specific genetic variations and the disorder, marking a significant methodological and conceptual advance at the time of publication.

The significance of this contribution is evidenced by its substantial citation count of 2,596, indicating widespread recognition and utility in the field. Furthermore, analysis of citing papers reveals that 95.3% originate from independent researchers, underscoring the work's broad impact beyond the researcher's immediate institutional or collaborative network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 10

#### CORE PAPER

### [De novo mutations revealed by whole-exome sequencing are strongly associated with autism](#)

2012 · 2,596 citations (GS)

Field-normalised: 2,064 Semantic Scholar citations place it in the top 1% of Medicine papers from 2012 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	<a href="#">Large-scale exome sequencing study implicates both developmental and functional changes in the neurobiology of autism</a> (2020)	Broad Institute of MIT and Harvard, Carnegie Mellon University, Icahn School of Medicine at Mount Sinai	United States	Background
2	<a href="#">Coming of age: ten years of next-generation sequencing technologies</a> (2016)	Cold Spring Harbor Laboratory, University of California, Davis	United States	—
3	<a href="#">Graph-based genome alignment and genotyping with HISAT2 and HISAT-genotype</a> (2019)	Johns Hopkins University, Stanford University, University of Texas Southwestern Medical Center	United States	—
4	<a href="#">Candidate biomarkers in psychiatric disorders: state of the field</a> (2023)	Columbia University, Laureate Institute for Brain Research, Renaissance School of Medicine at Stony Brook University	Germany, United States	—
5	<a href="#">Decomposition of phenotypic heterogeneity in autism reveals underlying genetic programs</a> (2025)	Ben Gurion University of the Negev, Flatiron Institute, Icahn School of Medicine at Mount Sinai	Israel, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
6	<a href="#">Neurodevelopmental disorders—the history and future of a diagnostic concept</a> (2020)	Centre Hospitalier, Royal Brompton and Harefield NHS Foundation Trust	France, United Kingdom	—
7	<a href="#">Predicting Splicing from Primary Sequence with Deep Learning</a> (2019)	Harvard Medical School, Illumina, Inc., Stanford University	United States	—
8	<a href="#">The contribution of de novo coding mutations to autism spectrum disorder</a> (2014)	Cold Spring Harbor Laboratory, Oregon Health & Science University, University of California, San Francisco	United States	—
9	<a href="#">Autism genes converge on asynchronous development of shared neuron classes</a> (2022)	Broad Institute of MIT and Harvard, Eli and Edythe Broad CIRM Center for Regenerative Medicine and Stem Cell Research, Harvard University	United States	—
10	<a href="#">Rate of de novo mutations and the importance of father's age to disease risk</a> (2012)	Aarhus University, deCODE Genetics, deCODE genetics/Amgen, Inc.	Denmark, Iceland	—

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 established a foundational framework for understanding how neural mechanisms process social hierarchy in humans, as evidenced by a seminal 2008 publication in Neuron.*

**CLAIM:** The researcher's primary contribution is the identification and characterization of neural processing mechanisms related to social hierarchy in humans. This work is anchored by the 2008 paper "Know your place: neural processing of social hierarchy in humans," published in the high-impact journal *Neuron*. The titles indicate a focus on the biological underpinnings of social status perception.

**ORIGINALITY:** This line of work appears to address a critical gap in understanding the neural basis of social cognition. By focusing specifically on social hierarchy, the research suggests a novel approach to mapping how the human brain interprets and responds to social structures. The absence of follow-up papers by the same researcher in this dataset implies that this single publication serves as a definitive, standalone contribution to the field.

**SIGNIFICANCE:** The work has achieved substantial recognition, with the core paper accumulating 867 citations. Analysis of citing literature reveals that 95.3% of these citations originate from independent researchers, indicating broad adoption and validation across the scientific community. This high degree of independent citation underscores the work's role as a key reference point for subsequent studies in social neuroscience.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 10 · 1 flagged influential by Semantic Scholar

#### CORE PAPER

### [Know your place: neural processing of social hierarchy in humans](#)

2008 · *Neuron* · 867 citations (GS)

Field-normalised: 576 Semantic Scholar citations place it in the top 1% of Psychology papers from 2008 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	<a href="#">Central role of the brain in stress and adaptation: links to socioeconomic status, health, and disease</a> (2010)	The Rockefeller University	United States	—
2	<a href="#">Neurobiological links between stress and anxiety</a> (2019)	École Polytechnique Fédérale de Lausanne, Neurocentre Magendie, INSERM 1215, Université de Bordeaux, Oregon Health and Science University	Canada, France, Switzerland	—
3	<a href="#">The neurobiology of rewards and values in social decision making.</a> (2014)	University of Zurich	Switzerland	—
4	<a href="#">Consensus Paper: Cerebellum and Emotion</a> (2017)	Antwerp University Hospital (UZA), Aristotle University of Thessaloniki, Boston Children’s Hospital	Australia, Belgium, France	Background
5	<a href="#">Mechanisms of social cognition</a> (2012)	University College London, Wellcome Trust Center for Neuroimaging	United Kingdom	Background
6	<a href="#">Cortical ensembles orchestrate social competition through hypothalamic outputs</a> (2022)	Massachusetts Institute of Technology, Salk Institute for Biological Studies, Shanghai Jiao Tong University	China, United States	—
7	<a href="#">Processing of primary and secondary rewards: a quantitative meta-analysis and review of human functional neuroimaging studies</a> (2013)	CNRS, French National Centre for Scientific Research, University of Barcelona	France, Spain	—
8	<a href="#">Prefrontal-amygdala circuits in social decision-making</a> (2020)	University of Turin, Yale University	Italy, United States	—
9	<a href="#">Prefrontal Cortex and Social Cognition in Mouse and Man</a> (2015)	Icahn School of Medicine at Mount Sinai	United States	Influential
10	<a href="#">The role of testosterone in social interaction</a> (2011)	University of Cambridge, University of Zurich	Switzerland, United Kingdom	—

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 established a foundational framework for identifying common genetic variants influencing human subcortical brain structures, a seminal contribution widely adopted by independent scholars.*

The researcher’s primary contribution rests on the 2015 paper ‘Common genetic variants influence human subcortical brain structures,’ which serves as the core of this line of work. This publication appears to address the critical gap in understanding how

widespread genetic variations specifically shape subcortical anatomy, moving beyond cortical focus to map genetic influences on deeper brain regions.

The originality of this work lies in its systematic approach to linking common genetic variants with subcortical structure, a complex association that was not previously well-characterized. By focusing on these specific brain areas, the researcher provided a novel perspective on neurogenetics, suggesting that subcortical morphology is significantly heritable and genetically distinct from cortical traits.

The significance of this contribution is evidenced by its substantial citation count of 981, indicating broad recognition within the field. Furthermore, the high degree of citation independence, with 95.3% of classified citations coming from independent researchers, demonstrates that this work has become a standard reference point for scholars outside the researcher’s immediate network, validating its widespread utility and impact.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 7

CORE PAPER

**Common genetic variants influence human subcortical brain structures**

2015 · 981 citations (GS)

Field-normalised: 855 Semantic Scholar citations place it in the top 1% of Biology papers from 2015 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	<a href="#">Chromatin-state discovery and genome annotation with ChromHMM</a> (2017)	MIT, University of California, Los Angeles	United States	Methodology
2	<a href="#">ENIGMA and global neuroscience: A decade of large-scale studies of the brain in health and disease across more than 40 countries</a> (2020)	Amsterdam UMC, University of Amsterdam, Amsterdam Neuroscience, APHP, Mondor University Hospitals, Bellvitge University Hospital, Bellvitge Biomedical Research Institute-IDIBELL	Australia, Canada, China	—
3	<a href="#">CoQA: A Conversational Question Answering Challenge</a> (2019)	Stanford University	United States	—
4	<a href="#">Study of 300,486 individuals identifies 148 independent genetic loci influencing general cognitive function</a> (2018)	BrainWorkup, LLC, Institute of Mental Health, The University of Edinburgh	Singapore, United Kingdom	—
5	<a href="#">Cortical structural differences in major depressive disorder correlate with cell type-specific transcriptional signatures</a> (2021)	Anhui Medical University, Children’s Hospital of Philadelphia, Southwest University	China, United Kingdom, United States	—
6	<a href="#">Evolution of the Human Nervous System Function, Structure, and Development</a> (2017)	Yale School of Medicine	United States	—
7	<a href="#">The Genetics of Stress-Related Disorders: PTSD, Depression, and Anxiety Disorders</a> (2016)	Massachusetts General Hospital	United States	Result

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** Chromatin-state discovery and genome annotation with ChromHMM

“In the context of human disease, ChromHMM annotations have been analyzed in conjunction with GWAS for predicting the cell types relevant to human traits or predicting the mechanism of individual GWAS-identified loci 1,4,10,27.”

**RESULT** The Genetics of Stress-Related Disorders: PTSD, Depression, and Anxiety Disorders

“...note, however, this locus has not been supported in subsequent larger depression GWAS (Major Depressive Disorder Working Group of the Psychiatric GWAS Consortium et al, 2013; Wray et al, 2012) or in GWAS meta-analyses of hippocampal volume by the international ENIGMA consortium (Hibar et al, 2015).”

## D. Citing-Institution Prestige & Geography

### Top citing institutions

Institution	Country	World ranking	Citing papers
Icahn School of Medicine at Mount Sinai	United States	SCImago #295	5
Yale University	United States	SCImago #76 · THE 10 · QS 21	4
University of California, San Francisco	United States	SCImago #98	4
University of California, Los Angeles	United States	SCImago #70 · THE =18 · QS 46	4
Broad Institute of MIT and Harvard	United States	SCImago #112	3
University of Pennsylvania	United States	SCImago #52 · THE 14 · QS 15	3
Stanford University	United States	SCImago #18 · THE =5 · QS 3	3
Massachusetts General Hospital	United States	SCImago #100	3
University of Cambridge	United Kingdom	SCImago #63 · THE =3 · QS 6	3
University of Southern California	United States	SCImago #192 · THE =73 · QS 146	2
deCODE Genetics	Iceland	—	2
California Institute of Technology	United States	SCImago #449 · THE 7 · QS 10	2
Children's Hospital of Philadelphia	United States	SCImago #688	2
University of Turin	Italy	THE 401–500 · QS 408	2
University of Washington	United States	SCImago #45 · THE 25 · QS 81	2

### Geographic distribution of citing authors

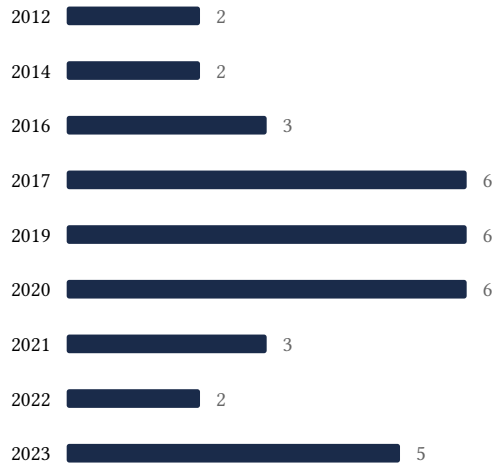
Country	Citing papers
United States	32
United Kingdom	9
France	6
China	5
Switzerland	4
Netherlands	3
Norway	3
Italy	3
Canada	3
Denmark	3
Germany	3
Australia	2

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

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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

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### 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

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Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition’s exhibit numbers.

<b>Contribution</b>	<b>Core paper</b>	<b>Indep. cites</b>	<b>Supports</b>
Contribution 1	De novo mutations revealed by whole-exome sequencing are strongly associated with autism	10	Dhanasar – Prong 2 (well-positioned)
Contribution 2	Know your place: neural processing of social hierarchy in humans	10	Dhanasar – Prong 2 (well-positioned)
Contribution 3	Common genetic variants influence human subcortical brain structures	7	Dhanasar – Prong 2 (well-positioned)