BIOGRAPHICAL SKETCH

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NAME: Vasunilashorn, Sarinnapha

eRA COMMONS USER NAME (credential, e.g., agency login): svasunilashorn

POSITION TITLE: Assistant Professor of Medicine and Epidemiology, Harvard Medical School, Harvard T. H. Chan School of Public Health

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of California, Los Angeles	B.S.	12/2003	Psychobiology
University of Southern California	Ph.D.	02/2010	Gerontology
Princeton University	Postdoctoral	08/2013	Population Health
Beth Israel Deaconess Medical Center/Harvard Medical School	Postdoctoral	10/2016	Clinical Gerontology

A. Personal Statement

I am an Assistant Professor of Medicine at Harvard Medical School (HMS) and the Division of General Medicine at Beth Israel Deaconess Medical Center (BIDMC), and an Assistant Professor in the Department of Epidemiology at the Harvard T. H. Chan School of Public Health. I am a gerontologist with multidisciplinary training in epidemiology, clinical gerontology, and population health. My primary area of research focuses on identifying shared biological mechanisms that link postoperative delirium and Alzheimer's disease and Alzheimer's disease related dementias (AD/ADRD). I currently lead 1 R01 NIH-funded study and 1 Alzheimer's Association funded study and have served as first (or co-first) author on several seminal papers describing the role of genetic risk and the inflammatory response in delirium pathophysiology following acute surgical stress.

Below I highlight ongoing relevant projects:

R01 AG079864
Vasunilashorn (PI)
Brain Vulnerability in Delirium and Alzheimer's Disease and Related Dementias: Intersection of Polygenic Risk and Inflammation
2/1/23-10/31/28

Alzheimer's Association Research Fellowship (AARG)-22-917342
Vasunilashorn (PI)
Polygenic Risk and Inflammation in Delirium and Alzheimer's Disease
8/1/22-7/31/25

Citations:

a. **Vasunilashorn SM,** Wolfson E, Berger M, Leung J, Ware EB, Baccarelli A, Jones RN, Ngo LH, Marcantonio ER, Inouye SK, Kind AJH. Multi-level social determinants of health, inflammation, and postoperative delirium in older adults. *J Am Geriatr Soc* 2025;73:279-282. PMCID: PMC11735270.
b. b. **Vasunilashorn SM**, Ngo LH, Inouye SK, Fong TG, Jones RN, Dillon ST, Libermann TA, O'Connor M, Arnold SE, Xie Z, Marcantonio ER. Apolipoprotein E genotype and the association between C-reactive protein and postoperative delirium: Importance of gene-protein interactions. *Alzheimers Dement* 2020;16:572-580. PMCID: PMC7086383.

c. c. **Vasunilashorn SM,** Ngo LH, Jones RN, Inouye SK, Hall KT, Gallagher J, Dillon ST, Xie Z, Libermann TA, Marcantonio ER. The association between C-reactive protein and postoperative delirium differs by catechol-O-methyltransferase genotype. *Am Geriatr Psychiatry* 2019;27:1-8. PMCID: PMC6310215.

d. d. **Vasunilashorn SM,** Fong TG, Albuquerque A, Marcantonio ER, Schmitt EM, Tommet D, Gou Y, Travison TG, Jones RN, Inouye SK. Delirium severity post-surgery and its relationship with long-term cognitive decline in a cohort of patients without dementia. *J Alzheimers Dis* 2018;61:347-358. PMCID: PMC5714669.

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments:

2019- Assistant Professor of Epidemiology, Harvard T. H. Chan School of Public Health

2019- Assistant Professor of Medicine, Division of General Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School

2017-2019 Instructor in Medicine, Division of General Medicine, Beth Israel Deaconess Medical Center/Harvard Medical School

2013-2016 Postdoctoral Fellow, Division of General Medicine and Primary Care, Beth Israel Deaconess Medical Center/Harvard Medical School (Edward Marcantonio, MD, SM)

2010-13 Postdoctoral Research Associate, Office of Population Research, Princeton University (Noreen Goldman, DSc)

2006-10 Graduate Student Researcher, Davis School of Gerontology, University of Southern California (USC) (Eileen Crimmins, PhD; Caleb Finch, PhD)

2006,7 Graduate Student Summer Intramural Research Program Intern, Laboratory of Epidemiology, Demography, and Biometry (LEDB), NIA (Jack Guralnik, MD, PhD)

Honors:

2018 New Investigator Award, Perioperative Cognition and Delirium Professional Interest Area, International Society to Advance Research and Treatment (ISTAART), Alzheimer's Association International Consortium (AAIC)

2014-17 NIH Clinical Loan Repayment Program. Project title: Identifying the Genetic and Inflammatory Mechanisms of Postoperative Delirium and its Long-Term Cognitive and Functional Outcomes

2015 Center of Excellence for Delirium in Aging: Research Training, and Educational Enhancements (CEDARTREE) Best Delirium Paper Award for manuscript entitled, "Cytokines and postoperative delirium in older patients undergoing major elective surgery."

2014 American Geriatrics Society/NIA travel award to attend the U13 AG039151 Conference Series in Geriatrics from Bedside to Bench – Delirium in Older Adults: Finding Order in the Disorder

2012 University of Alabama at Birmingham, School of Public Health and Department of Biostatistics to attend the Statistical Genetics and Genomics summer course

2012 University of Miami, Hussman Institute for Human Genomics Scholarship to attend the Genetic Analysis of Complex Human Diseases summer course

2011-13 NIH Loan Repayment Program, National Center on Minority Health and Health Disparities. Project title: Socioeconomic Status and Functional Limitations

2010 Heinz Osterburg Dissertation Award

2009-10 Phi Kappa Phi, invitational all-discipline honors society, USC

2005-10 Sigma Phi Omega, Gerontology honor society, USC

2005-6 Ed & Rita Polusky Scholarship, USC

Professional Societies and Public Advisory Committees:

<u>Association Memberships</u>

2024- Editorial Board, Journal of Gerontology: Medical Sciences

2023 NIA K76 Beeson Career Development Award Review Committee, member

2023- Alzheimer's Association Research Grants Review Committee, member

2020 US Department of Veterans Affairs Rehabilitation Research & Development Editorial panel: Chronic Medical Conditions & Aging (RRD6 Scientific Group Review), member

2018 Alzheimer's Research Cooperation Grants (UK Network) Review Committee, member

2015- Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment

2014- American Delirium Society, member
2014- American Geriatrics Society, member
2012- American Society of Human Genetics, member
2007- Population Association of America, member
2006- Gerontological Society of America, member

C. Contributions to Science

1. Correlates and Consequences of Stress: A first line of research established a new series of studies on the consequences of stress. One project demonstrated that perceived stress is predictive of all-cause mortality in late life, with an attenuated effect when perceptions of health are excluded (ref a). A second project illustrated that exposure to stressors in late life increases while perceived stress decreases over the same time, and with the exception of health-related stressors, change in exposure to stressors is not associated with change in perceptions of stress (ref b). A third manuscript reported on the health consequences of widowhood in late life (ref c). A fourth paper shifted focus to the biological correlates of stress and reported an association between short telomere length and inflammatory cytokine interleukin (IL)-6, as well as a summary measure of anabolic and catabolic analytes (ref d).

a. **Vasunilashorn S**, Glei DA, Weinstein M, Goldman N. Perceived stress and mortality in a Taiwanese older adult population. *Stress* 2013;16:600-6. PMCID: PMC44441339.
b. **Vasunilashorn S**, Lynch SM, Glei DA, Weinstein M, Goldman N. Exposure to stressors and trajectories of perceived stress among older adults. *J Gerontol B Psychol Sci Soc Sci* 2015;70:329-37. PMCID: PMC4415078.
c. Choi KH,* **Vasunilashorn S.*** (co-first) Widowhood, age heterogamy, and health: the role of selection, marital quality, and health behaviors. *J Gerontol B Psychol Sci Soc Sci* 2014;69:123-34. PMCID: PMC3894121.
d. **Vasunilashorn S**, Cohen AA. Stress responsive biochemical anabolic/catabolic ratio and telomere length in older adults. *Biodemography Soc Biol* 2014;60:174-84. PMCID: PMC4347836.

2. Biological Mechanisms of Delirium: My current work at BIDMC/HMS is focused on identifying inflammatory mechanisms of postoperative delirium. One paper aimed to develop a biomarker inflamamtory signature of delirium (ref a). A second and third manuscript used two proteomics approaches that identified inflammatory markers C-reactive protein (CRP; ref b) and chitinase 3-like protein (CHI3L1/YKL-4; ref c) as the top proteins associated with delirium. A fourth paper reports on the association between neuronal injury marker, neurofilament light chain (NfL), with postoperative delirium (ref d).

a. **Vasunilashorn SM,** Ngo LH, Chan NY, Zhou W, Dillon ST, Out HH, Inouye SK, Wyrobnik I, Kuchel GA, McElhaney JE, Xie Z, Alsop DC, Jones RN, Libermann TA, Marcantonio ER. Development of a dynamic multi-protein signature of postoperative delirium. *J Gerontol A Biol Sci Med Sci* 2019;74:261-268. PMID: 29529166. PMCID: PMC6333936.
b. Dillon ST,* **Vasunilashorn SM**,* (co-first) Ngo L, Otu H, Inouye SK, Jones RN, Alsop DC, Kuchel GA, Marcantonio ER,** Libermann TA.** (co-last) Higher C-reactive protein levels predict postoperative delirium in older patients undergoing major elective surgery: A longitudinal nested case-control study. *Biol Psychiatry* 2017;81:145-153. PMCID: PMC5035711.
c. **Vasunilashorn SM,** Dillon ST, Chan NY, Fong TG, Joseph M, Tripp B, Xie Z, Ngo LH, Lee CG, Elias JA, Otu HH, Inouye SK, Marcantonio ER, Libermann TA. Proteome-wide analysis using SOMAscan identifies and validates chitinase-3-like protein 1 as a risk and disease markers of postoperative delirium. *J Gerontol A Biol Sci Med Sci* 2022;77:484-493. PMCID: PMC88939174.
d. Fong TG*, **Vasunilashorn SM*,** (co-first) Ngo L, Libermann T, Dillon S, Schmitt S, Arnold SE, Jones R, Marcantonio ER, Inouye SK. Association of plasma neurofilament light with postoperative delirium. *Ann Neurol* 2020;88:984-994. doi: 10.1002/ana.25889. PMCID: PMC7581557.

3. Genetic Mechanisms of Delirium and Cognitive Decline: A third major emphasis of my career aims to quantify the severity of delirium and its association with clinical outcomes. One manuscript examines the relationship between genetic risk markers and cognitive function in a population-based older cohort (ref a). A second manuscript reports on the absence of an association between apolipoprotein E (APOE) and postoperative delirium in the largest, most well-characterized sample of older surgical patients without dementia (ref a). A third paper reports on differences in the relationship between inflammatory marker CRP

and delirium by catechol-O-methyltransferase genotype (COMT; ref c). A fourth manuscript further highlights differences in the relationship between CRP and delirium by APOE genotype (ref d).

a. Todd M, Schneper L, Notterman D, **Vasunilashorn SM,** Goldman N. Genetic risk and cognitive function among older Taiwanese adults. PLOS One 2018;13:e0206118. PMCID: PMC6195295.
b. **Vasunilashorn SM,** Ngo L, Kosar CM, Fong TG, Jones RN, Inouye SK, Marcantonio ER. Does Apolipoprotein E genotype increase risk of postoperative delirium? *Am J Geriatr Psychiatry* 2015;23:1029-37. PMCID: PMC4591079.
c. **Vasunilashorn SM**, Ngo LH, Jones RN, Inouye SK, Hall KT, Gallagher J, Dillon ST, Xie Z, Libermann TA, Marcantonio ER. The association between C-reactive protein and postoperative delirium differs by catechol-O-methyltransferase genotype. *Am J Geriatr Psychiatry* 2019;27:1-8. PMCID: PMC6310215.
d. **Vasunilashorn SM**, Ngo LH, Inouye SK, Fong TG, Jones RN, Dillon ST, Libermann TA, O'Connor M, Arnold SE, Xie Z, Marcantonio ER. Apolipoprotein E genotype and the association between C-reactive protein and postoperative delirium: Importance of gene-protein interactions. *Alzheimers Dement* 2020;16:572-580. PMCID: PMC7086383.

4. Inter-relationships of Delirium, Cognitive Decline, and Alzheimer's disease and Alzheimer's disease related dementias (AD/ADRD): A fourth line of inquiry focuses on the epidemiologic and pathophysiology relationship between delirium and AD/ADRD, including long-term cognitive decline. One manuscript reports greater declines in cognition among patients with the highest delirium severity (ref a). Another paper conceptualizes a model underlying the potential shared pathophysiology between delirium and AD/ADRD, including promising key biologic mechanisms (ref b). A recent paper reports on the relationship between delirium, AD/ADRD biomarkers, and delirium severity (ref c).

a. **Vasunilashorn SM,*** Fong TG,* (co-first) Albuquerque A, Marcantonio ER, Schmitt EM, Tommet D, Gou Y, Travison TG, Jones RN, Inouye SK. Delirium severity post-surgery and its relationship with long-term cognitive decline in a cohort of patients without dementia. *J Alzheimers Dis* 2018;61:347-358. PMCID: PMC5714669.
b. Fong TG, **Vasunilashorn SM**, Libermann TA, Marcantonio ER, Inouye SK. Delirium and Alzheimer's disease: A proposed model for shared pathophysiology. *Int J Geriatr Psychiatry* 2019;34:781-789. PMCID: PMC6830540.
c. Fong TG*, **Vasunilashorn SM*,** (co-first) Gou Y, Libermann TA, Dillon S, Schmitt E, Arnold SE, Kivisäkk P, Carlyle B, Oh ES, Vlassakov K, Kunze L, Hshieh T, Jones RN, Marcantonio ER, Inouye SK. Association of CSF Alzheimer's disease biomarkers with postoperative delirium in older adults. *Alzheimers Dement (N Y)* 2021;7:e12125. PMCID: PMC7968120.
d. Umonh ME, Fitzgerald D, **Vasunilashorn SM**, Oh ES, Fong TG. The relationship between delirium and dementia. *Semin Neurol* 2024;44:732-751.

5. Social Determinants of Health and Differences in Biological Measures of Health Among Populations: A fifth line of inquiry that I have recently resumed investigation is the association between social determinants of health and the differences in biological measures of health among varying populations. One manuscript reports that blood inflammation explains part of the association between social determinants of health and delirium (ref a). A second manuscript reports on biodemographic approaches to study trends in biological markers of health and the association between race/ethnic and socioeconomic groups by biological markers of health (ref b). A third paper reports on differences in biological markers of health among older adults with and without visual impairments (ref c). A fourth manuscript reports on differences in biological markers of health among older adults in the US and Japan (ref d).

a. **Vasunilashorn SM,** Wolfson E, Berger M, Leung J, Ware EB, Baccarelli A, Jones RN, Ngo LH, Marcantonio ER, Inouye SK, Kind AJH. Multi-level social determinants of health, inflammation, and postoperative delirium in older adults. *J Am Geriatr Soc* 2025;73:279-282. PMCID: PMC11735270.
b. Crimmins E, Kim JK, **Vasunilashorn S.** Biodemography: new approaches to understanding trends and differences in population health and mortality. *Demography* 2010:47:S41-64. PMCID: PMC5870619.
c. Steinman BA, **Vasunilashorn S.** Biological risk of older adults with visual impairments. *J Nutr Health Aging* 2011;15:296-302. PMCID: PMC3526109.

d. Crimmins EM, **Vasunilashorn S,** Kim JK, Hagedorn A, Saito Y. A comparison of biological risk factors in two populations: The United States and Japan. *Popul Dev Rev* 2008;34:457-482. PMCID: PMC2676846.

Complete List of Published Work in NCBI (total of 73 papers):
https://www.ncbi.nlm.nih.gov/sites/myncbi/sarinnapha.vasunilashorn.1/bibliography/41639035/public/?sort=date&direction=ascending.