Report of Dr. James M. Noble

Professor of Neurology at Columbia University Irving Medical Center

Professional Background.

I am a Professor of Neurology at Columbia University Irving Medical Center (CUIMC). I have been a member of the faculty at Columbia University since 2008. I am also appointed in the Taub Institute for Research on Alzheimer's Disease and the Aging Brain and the GH Sergievksy Center, both at CUIMC. Among my various responsibilities I am the Clinical Core Leader and Co-Director of the National Institute on Aging (NIA) sponsored Columbia University Alzheimer's Disease Research Center. I am the program co-leader for the Columbia CMS Guiding an Improved Dementia Experience (GUIDE) Model program. I serve in numerous other key roles for these institutions, programs, and centers in support of decades-long local, national, and international research initiatives focused on Alzheimer's Disease and related dementias.

Prior to 2008, my training includes:

- Bachelor of Science, math and chemistry, Vanderbilt University (*magna cum laude* 1998)
- Doctor of Medicine, Emory University School of Medicine (2002)
- Post-graduate training at New York Presbyterian-CUIMC
    - Preliminary medicine internship (2002-2003)
    - Neurology residency (2003-2006)
    - Behavioral neurology fellowship (2006-2008), through an NIH-sponsored training program focused on neuroepidemiology
    - Master's degree in Epidemiology, Columbia University Mailman School of Public Health (2008)

I am board certified in:

- Neurology (#54098, American Board of Psychiatry and Neurology)
- Behavioral neurology & neuropsychiatry (#BNNP00326-08, United Council of Neurological Subspecialities)
- Public health (#20070713279, National Board of Public Health Examiners).

I have numerous certifications pertaining to my research and clinical work, including as a certified rater for the Clinical Dementia Rating (CDR) scale (effective 1/25/2011).

I have licenses to practice medicine in New York and New Jersey.

My work at Columbia University involves a mix of clinical duties and research principally focused on cognitive aging. I have received continuous funding from the NIA, a branch of the National Institutes of Health (NIH) since 2008 and lead several research projects and contribute to others. My publications include over 90 peer-reviewed articles, and I have been cited in other peer-reviewed publications over 8500 times. I am active in clinical care as part of one of the busiest cognitive aging practices in the country serving upwards of 3000 persons annually, which works closely with large clinical and research programs involving neuropsychological testing, multimodal brain imaging computed tomography (CT), magnetic resonance imaging (MRI), and molecular & functional positron emission tomography (PET). Clinical and epidemiological studies in which I lead or participate range

from local in the community surrounding CUIMC to national collaborative projects involving several thousand aging persons. On a monthly basis I am involved in the evaluation of around 100 individuals for a range of cognitive aging disorders including normal cognitive aging, mild cognitive impairment, and Alzheimer's disease and related dementias.

I also lead multigenerational neurological education programs in our community and direct or co-direct several neuroscience educational initiatives at the Columbia University Vagelos College of Physicians & Surgeons.

Aside from my current research and clinical work focusing on cognitive aging disorders including Alzheimer's disease and related dementias, my general neurology experience and knowledge is also extensive. I am co-editor of *Merritt's Neurology* (Wolters-Kluwer), a standard textbook of neurology with its most recent 14th edition published in 2021. Along with editorial responsibilities for the majority of the book, I wrote the chapters on the neurological history and examination (Section II: Approach to the Neurological Patient, Chapters 3 and 4) and was the Diagnostic Tests section editor (Section IV) which covers all standard diagnostic approaches in clinical neurology, including brain imaging and neuropsychological testing. I also authored or co-authored multiple chapters in *Merritt's Neurology 14th edition* including chapters on Dementia and Memory Loss (Ch. 12), Mild Cognitive Impairment (Ch. 50) and Alzheimer's disease (Ch. 51). I am also author of the dementia caregiver handbook *Navigating Life with Dementia* (Oxford University Press/American Academy of Neurology 2022). In recognition of my work, I have received several awards and am a fellow of the American Academy of Neurology. My complete CV is attached as a separate document.

I have no known prior personal or professional connection with any individuals involved in the case presented in this review. I am unaware of any potential conflicts of interest. My opinions offered in this summary are not part of my work at Columbia University.

Introduction

In March 2023 a proceeding was initiated to investigate concerns that Judge Pauline Newman was suffering from a disability, specifically cognitive impairment. A Special Committee was appointed to look into this matter. As part of that inquiry, the Special Committee received a number of affidavits from court employees. The Committee then directed Judge Newman to undergo an evaluation by a neurologist and a neuropsychologist selected by the Committee. Judge Newman declined to undergo those examinations. In September 2023 the Judicial Council of the Federal Circuit determined that Judge Newman should be suspended from hearing cases for 1 year. In September 2024 that suspension was renewed for another year.

On September 25, 2024, Judge Newman filed a motion for reconsideration that was primarily based on a report submitted by Dr. Aaron Filler. She had previously submitted reports of Drs. Ted Rothstein and Regina Carney, both of which Dr. Filler relied on in his report.

I have been asked to review these reports and provide an opinion on the soundness of the conclusions within those reports. My report reflects my opinions based on review of documents provided for me. I have not directly interviewed or examined Judge Newman. I do not intend to diagnose her, but rather to indicate how a cognitive diagnosis should have been determined in her circumstance, and how a workup should have been pursued. This document should not be interpreted as a substitute for direct clinical care.

Documents reviewed.

To develop this report, I reviewed all pages of provided material pertaining to Judge Pauline Newman (See *Appendix* for complete list). Documents to highlight include:

- The initial evaluation and subsequent summary of Dr. Ted Rothstein (neurologist affiliated with George Washington University Hospital) from 6/21/2023
- The independent medical examination by Dr. Regina Carney (forensic psychiatrist) from 8/25/23
- The summary authored by Dr. Aaron Filler (neurosurgeon) dated 9/17/2024 reflecting the evaluation which took place 8/24/2024.
- 8/22/2024 CT brain perfusion including documentation of results by Dr. Reza Taheri (radiologist at George Washington University), available axial source images, and the interpretation by Dr. Filler.
- Affidavits from court staff concerning interactions with Judge Newman, as listed in the attached *Appendix*. This portfolio of documents also included several email exchanges pertaining to Judge Newman from April and July 2023.
- The Orders of the Judicial Council from September 2023 and September 2024, and the motion for reconsideration from September 2024.

ANALYSIS

There are major problems, errors, and/or oversights, in each of the evaluations of Drs. Rothstein, Carney, and Filler. Their evaluations end up being wrong for different and sometimes overlapping reasons.

I. Dr. Rothstein

Dr. Rothstein's evaluation is flawed for several important reasons. First, no collateral source was sought to provide independent observation of Judge Newman's daily cognitive performance. He makes no mention of having reviewed any of the affidavits available in the Special Committee's July 31, 2023 Report, so it appears he did not consult them. Only Judge Newman's own perceptions of performance were included. It is recognized that poor self-awareness of cognitive performance is a common problem in aging populations.[1] Important cognitive changes can be missed without formal assessment through testing and gathering of information through collateral sources.[2] A standard approach to establishing a diagnosis in clinical medicine relies on good information in the history and examination.[3] In the context of cognitive aging concerns, collateral source history substantively and often critically informs the history related to the patient.[4] Collateral source information relies on observations of a friend, family member, or coworker, and is placed in context with information provided by the patient. Dr. Rothstein's failure to consider any collateral source information is a major flaw and substantially undermines any conclusions he could draw.

Second, the MoCA was incorrectly scored. Dr. Rothstein should have added up the score to be 21/25, and not 24/28 as he reported. Because of Judge Newman's injured hand, the tests of writing (trail making, cube copying, and clock drawing), which comprise 5 of the 30 points, were not done. Thus, the total maximum score on Judge Newman's MoCA is 25, not 28. Of the 25 available points, Judge Newman missed 4 points specifically on the task of remembering 5 words for several minutes. The MoCA allows for an adjustment of scores for those unable to conduct the written/drawn tasks, and 25/30 is the final score after this adjustment.[5] Someone performing in the professional role of Judge Newman would be expected to have a perfect score or nearly so. Using the National Alzheimer's Coordinating Center (NACC) normative data[6] which has been developed based on testing of thousands of individuals, Judge Newman's MoCA score of 25/30 when further placed into context for

[1] Sunderaraman P and Cosentino S. "Integrating the Constructs of Anosognosia and Metacognition: a Review of Recent Findings in Dementia." *Curr Neurol Neurosci Rep*. 2017 Mar;17(3):27.).
[2] Villareal DT and Morris JC. "The Diagnosis of Alzheimer's disease." *J Alzheimers Dis*. 1999 Nov;1(4-5):249-63
[3] Bowen JL. "Educational strategies to promote clinical diagnostic reasoning." *N Engl J Med*. 2006 Nov 23;355(21):2217-25
[4] Villareal et al.
[5] https://mocacognition.com/faq/ The test may be scored on 25 and converted back to 30 using the following equation: ((*SCORE out of 25*) × 30) ÷ 25. For Judge Newman, this converted score is calculated as (*20* x 30) ÷ 25 =25.2 or 25/30. It is noted that this conversion has not been validated but serves as the best approximation of her cognitive performance at the time of Dr. Rothstein's evaluation.
[6] Uniform Data Set v3 Neuropsychological Battery norms calculator v March 10, 2017: https://files.alz.washington.edu/documentation/uds3-norms-calculator.xlsx

expected performance for her age (95y), education (25y), and sex (female) combined places her at approximately the 16th percentile for all peers. Adjusting for education alone, her score places her at the 6th percentile. In sum, using an established nationwide sample, 84-94% of Judge Newman's age-education-sex matched peers would be expected to perform better on the MoCA than Judge Newman.[7] It is established that the average MoCA score for mild cognitive impairment (MCI) is 22 with a range of 19-25[8]. Given that Judge Newman's MoCA score was 25/30, it is further evidence to potentially diagnose MCI. Whether considering adjusted or unadjusted MoCA scores, either way her difficulties should have prompted further evaluation such as with formal neuropsychological testing.

It is important to assure a common understanding of terms related to cognitive aging, including *normal cognitive aging*, *mild cognitive impairment*, and *dementia*.[9] It is common for older adults to slow down in the quickness of their responses or demonstrate slight issues with memory, focus, or attention. Normal cognitive aging is defined based on normative test performance for age, sex, and education, and when there is no evidence of cognitive impairment reported by persons or observed by others. In contrast and at the other end of the cognitive aging spectrum, *dementia* is defined by observed or demonstrated cognitive or behavioral changes which have gotten to the point that someone needs help from others to accomplish their daily routines such as appearing for appointments, completing tasks at work or at home, taking medications, or traveling to new places. Mild cognitive impairment covers a broad range of cognitive changes in a transition between normal cognitive aging and dementia. Depending on one's job responsibilities, someone with MCI may be independent in some daily routines (going to appointments, taking medications, etc.) but unable to complete more complicated or demanding tasks such as those inherent in jobs requiring strong cognitive abilities. Visually, this continuum is represented in this figure:[10]

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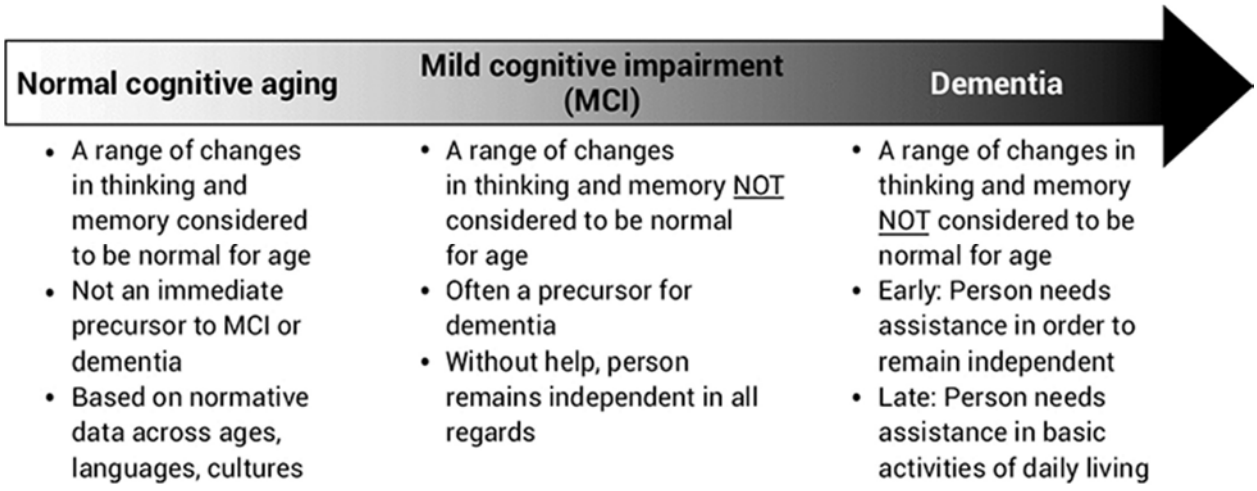
[7] Recognizing that UDSv3 normative data is limited for persons 90y and above as well as for those with more than 20y of education, another approach is to presume more conservative models with Judge Newman (artificially) being 89y old with 20y of education. This more conservative model still reveals that sex, age, and education adjusted MoCA score of 25/30 is at the 29th percentile of expected performance and with education-only adjusted score being at the 17th percentile. Thus 71-83% of all persons with her background would be expected to perform better than Judge Newman on the MoCA.

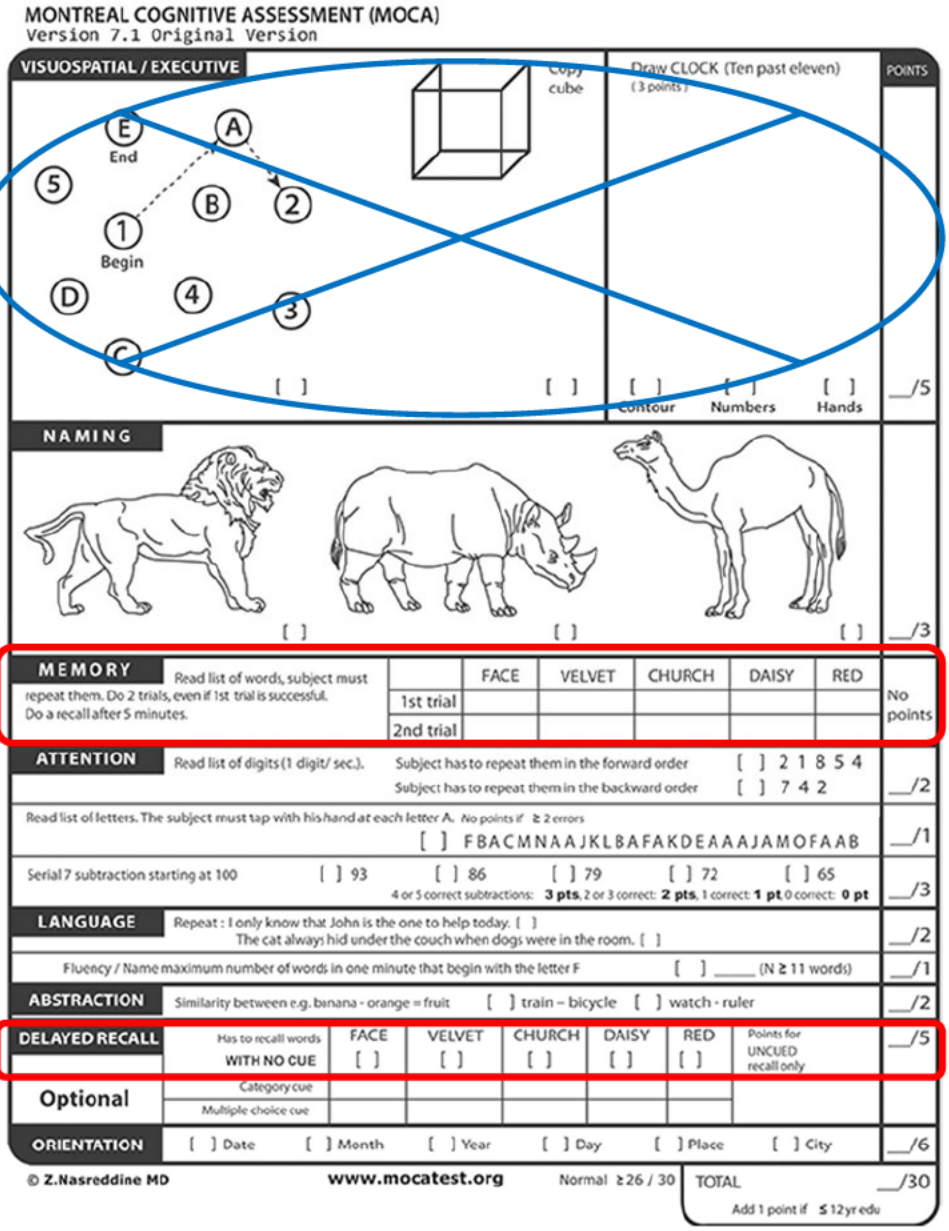
[8] https://mocacognition.com/faq/

[9] It is recognized that the terms *mild cognitive impairment* and *dementia* are interchangeably referred to in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5) as *minor neurocognitive disorder and major neurocognitive disorder* respectively. Their constructs are functionally equivalent, with DSM-5 terminology intending to destigmatize the term dementia. However, neurological clinical practice and research diagnostic standards continue to use and favor the terms MCI and dementia.

[10] Figure 1.1 Progression of changes in normal aging, MCI, and dementia from Chapter 1. "Dementia, Mild Cognitive Impairment, and Normal Changes of Aging: What's the Difference?" in *Navigating Life with Dementia* (James M. Noble, Oxford University Press/American Academy of Neurology, 2022)


Normal cognitive aging
• A range of changes in thinking and memory considered to be normal for age
• Not an immediate precursor to MCI or dementia
• Based on normative data across ages, languages, cultures
Mild cognitive impairment (MCI)
• A range of changes in thinking and memory NOT considered to be normal for age
• Often a precursor for dementia
• Without help, person remains independent in all regards
Dementia
• A range of changes in thinking and memory NOT considered to be normal for age
• Early: Person needs assistance in order to remain independent
• Late: Person needs assistance in basic activities of daily living

To better understand the specific problem Judge Newman faced on her MoCA, it is helpful to know what is in the MoCA, shown below. As detailed above, because of her injured writing hand, Judge Newman could not complete the written items, identified in the blue oval. Her main difficulty with the test is highlighted in the red boxes. After being instructed



to remember five words (top red box, typically "face, velvet, church, daisy, red"), and being given two trials to repeat them back to register them in mind, Judge Newman could recall only 1 of 5 words after a 5-minute delay (lower red box). A straightforward interpretation is that 80% of the information Judge Newman just learned on that test was forgotten.

The most common finding in MCI and early Alzheimer's disease is exactly this pattern—forgetting what was just learned.[11] In practice, this finding alone represents a major concern and indicates the need for a further evaluation. In my opinion Dr. Rothstein's impression is completely wrong when he stated "slight limitation in immediate memory as reflected in her MoCA evaluation. Her cognition is otherwise completely normal." This summary clearly understates or ignores what the MoCA demonstrated, even in the absence of collateral source information. There are meaningful memory changes which should have prompted at least a consideration of MCI and warranted further workup including neuropsychological testing. Further, when the MoCA score is considered in conjunction with the collateral source information contained within the affidavits, a diagnosis of mild cognitive impairment is even more strongly suggested.

II. Dr. Carney

Dr. Carney's evaluation also has significant problems. Dr. Carney mentions reviewing the "publicly available proceedings." This presumably includes the substance of the affidavits that are described extensively in the Judicial Council's Order of September 20, 2023. Those affidavits clearly demonstrate that multiple persons observed meaningful longitudinal changes in cognition and behavior in Judge Newman.

My review of those statements is notable for the following:

- [redacted] who worked with Judge Newman for nearly 17 years and noted problems forgetting over the past few years, leading Judge Newman to rely on others to help with her online connectivity and computer issues. [redacted] report of difficulty completing security trainings was particularly notable given that he had to "feed her answers." This statement alone should have been considered as a dramatic change from her prior abilities and a meaningful drop from her expected performance.
- By January 2023, [redacted] noted that an entire conversation they had was forgotten within 12 days. By March-April 2023, [redacted], who worked daily with Judge Newman for nearly 14 months by 4/2023 noted "on multiple occasions" that she had trouble recalling events and information and that "her memory loss and confusion has increased significantly" over that time.
- [redacted] (also of IT) noted she routinely misplaced files in her computer.
- In both IT statements there are themes of Judge Newman blaming others for what is most likely her own declining capacity to use systems in an independent manner.
- Two emails about the same topic 4/19/23 and 4/27/23 suggest that Judge Newman had forgotten that one of her staffers [redacted] had been reassigned, even though Judge Newman herself approved it.

[11] Honig LS, Salardini A, Kreisl WC, and Noble JM. Chapter 50: "Mild Cognitive Impairment." *In: Merritt's Neurology 14th Edition* (Eds. Louis, Mayer, and Noble, Wolters-Kluwer, 2021)

- A lengthy email exchange July 6-7, 2023 about access to her files highlights that Judge Newman was unable to understand multiple clear explanations given by others.

Dr. Carney made no mention of any of these documents which include critically important and revealing information.

Dr. Carney's evaluation was also problematic. The assessment included a 3-MS screening exam, which took a mere 11 minutes to complete. Judge Newman scored 98/100, losing points for only being able to name eight 4-legged animals in 20 seconds, scoring 8 out of 10 on this 3-MS subtest. 10 would have earned her full 10 points. Judge Newman's 4-legged animal score places her lower than 25th percentile in a study including more than 18,000 older adults.[12] That is, 75% of all persons could name 9 or 10 animals while she could only name 8. With a result like this, for a person with her educational history and background, this serves as another red flag. Dr. Carney reviewed Dr. Rothstein's note but makes no mention of the low score on the MoCA.

Cognitive screening examinations, most of which take just minutes to complete, are no substitute for hours-long comprehensive neuropsychological testing. It is well-established that cognitive screening examinations are often insensitive to early changes in cognition specifically in highly educated and accomplished persons, and that even normal scores can be incorrect (also known as the false-negative rate) in upwards of 50% of tested individuals.[13,14] Simply put, very smart and accomplished people like Judge Newman can do well on cognitive screening examinations, even when important, meaningful, ongoing cognitive changes are happening, and these are only revealed on more in-depth neuropsychological assessments. Dr. Rothstein's MoCA, the affidavits, and Dr. Carney's 3-MS test, taken individually or together, all of which were available to Dr. Carney, should at the very least have prompted a recommendation for further evaluation of Judge Newman such as comprehensive neuropsychological testing.

III. Dr. Filler

Dr. Filler's evaluation is incomplete and has major errors that undermine his conclusions. Dr. Filler reported having 3 elements of his evaluation, including a "detailed classical neurological examination," a "direct real-time interview," and "advanced functional testing," and each is problematic.

His neurological examination is incomplete because it includes no standardized assessment of cognitive abilities, such as a MoCA or 3-MS as used by Drs. Rothstein and Carney. Without these, there was no opportunity to assess problems with memory as identified in Dr. Rothstein's evaluation. Dr. Filler had access to reports of Drs. Rothstein and

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[12] Ryan J, et al. "Normative performance of healthy older individuals on the Modified Mini-Mental State (3MS) examination according to ethno-racial group, gender, age, and education level." *Clin Neuropsychol*. 2019 May;33(4):779-797

[13] O'Bryant SE et al. "Detecting dementia with the mini-mental state examination in highly educated individuals." *Arch Neurol*. 2008 Jul;65(7):963-7.

[14] Tombaugh, TN et al. "Mini-Mental State Examination (MMSE) and the Modified MMSE (3MS): a psychometric comparison and normative data." *Psychological Assessment* 8.1 (1996): 48

Carney from a year earlier. Standard practice would have been to repeat at least one of these instruments so that there could be a direct comparison one year to the next. It is established that repeating a cognitive screening test, such as the MoCA, can be helpful in identifying progression of cognitive problems.[15] Given that Judge Newman had meaningful cognitive problems in both evaluations by Drs. Rothstein and Carney in 2023, this should have prompted a repeat assessment by Dr. Filler during his evaluation in August 2024. Furthermore, Dr. Filler reported Dr. Rothstein's MoCA as "normal" when it was not.

Dr. Filler's direct real-time interview which intended to "make direct relevant personal experience comparisons relative to two oral arguments in 2019 and 2022 before panels which included Judge Newman" relied on his own subjective impressions of Judge Newman's performance on several hypothetical discussions and his own impression of past performance when presenting to her in a prior professional experience. This is a non-standard approach, is not generally established or accepted in the field as a reasonable substitute for standard neuropsychological testing, and is not part of a standard or recommended diagnostic approach for persons with cognitive aging problems. As I wrote in the *Merritt's Neurology* textbook, there is an established importance of using a standardized approach to the mental status examination:

> "There are several reasons that the neurologic examination includes a standardized mental status assessment. First, any standardized cognitive screening examination will often have been developed in the context of hundreds, if not thousands, of applications and multiple social economic and cultural contexts, making its interpretation more generalizable. Second, at the level of the examiner, use of the same examination repeatedly may give the examiner greater confidence in examination skill and interpretation based on a learned experience of typical or expected responses developed over the course of giving the same test in multiple clinical contexts. Third, most standardized mental status examinations allow for a hierarchical approach to understanding someone's cognitive abilities. For instance, for a task of delayed recall, it is important to understand not only what a patient can freely recall but also what the patient may recognize either through the contextual or categorical clue given for recognition tasks or subsequently through list of forced choices. Using a sequential, hierarchical approach to assessing memory abilities allows for determination of free word retrieval (presumably a harder response) versus recognition (by choices), which are thought to be independent of registration tasks. Finally, serial assessments of an individual patient may require adjustment of examination techniques to avoid the potential effects of learning or practice.
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> Many caveats apply to interpreting the mental status examination and thus require understanding and how it is devised for each patient, particularly how it is tailored to each cultural context. For instance,

[15] Freitas S et al. "Montreal cognitive assessment: validation study for mild cognitive impairment and Alzheimer disease." *Alzheimer Dis Assoc Disord.* 2013 Jan-Mar;27(1):37-43

> education and lifetime cognitive abilities play a strong role in one's ability to interpret both normal and abnormal mental status examination findings. Prior to each mental status examination, developed within social history must be a clear sense of someone's educational history, literacy, and thus likely expected performance on mental status testing. When interpreting formal neuropsychological testing, two norms are considered: the person's premorbid intellectual capacity as determined by intelligence quotient and professional accomplishments as well as comparison to normative values based on peer performance matched to age, education, and potentially primary language."[16]

Thus, even the approach Dr. Filler took has major vulnerabilities in that by skipping a standardized cognitive screening evaluation he missed important, basic, and fundamental elements of assessment which are readily and easily learned through standardized cognitive screening assessments. The approach Dr. Filler takes completely misses the opportunity for an objective standardized assessment and instead relies on a subjective and non-standard approach.

Dr. Filler advocated for use of CT Perfusion as a substitute for neuropsychological testing. On page 3 of his report, Dr. Filler states "…there is now a widespread medical understanding that Perfusion CT can be used to identify or rule out the presence of dementia or cognitive impairment on a reliable objective basis" and on page 16 of his report, he states "There is substantial medical literature that convincingly supports the proposition that high speed perfusion brain imaging supplants the inevitably subjective practice of neuropsychology in the fundamentals of cognitive assessment." He also states "Judge Newman's Perfusion CT test results obviate any need for a neuropsychology test battery—an outdated methodology, little different in design than their 16th century versions, and administered by non-physicians." All these assertions are wrong in several ways.

First, no brain imaging, including CT Perfusion, can serve as a substitute for a comprehensive clinical assessment of cognitive impairment which includes a thorough history, standardized examination, and neuropsychological testing. All major diagnostic criteria addressing the assessment of cognitive impairment begin by framing matters on a clinical and functional basis. That is, a diagnosis relies on day-to-day impacts of cognitive problems and observable measures of cognition. No brain imaging study can serve as a substitute for, or *be used instead of*, a clinical assessment. Structural brain imaging studies, such as CT or MRI, are routinely used to identify and treat potentially reversible causes of cognitive changes such as tumor or hydrocephalus.[17] Other studies such as PET imaging can help understand the cause of MCI or dementia. However, using a brain imaging study to determine a *cause* of memory loss is very different from using a brain imaging study *instead of* a cognitive assessment. Regardless, no structural brain imaging was ever done for Judge

[16] Noble JM. Chapter 4: "The Neurological Examination." *In: Merritt's Neurology 14th Edition* (Eds. Louis, Mayer, and Noble, Wolters-Kluwer, 2021)

[17] Knopman DS et al. "Practice parameter: Diagnosis of dementia (an evidence-based review) Report of the Quality Standards Subcommittee of the American Academy of Neurology." *Neurology* 56.9 (2001): 1143-1153

Newman and there is no reasonable or obvious explanation for why one was not recommended.[18] In my own experience as a specialist in dementia for many years, the approach Dr. Filler took is simply neither a standard nor acceptable clinical diagnostic approach in the field.

CT Perfusion can only demonstrate that a region of the brain is effectively receiving blood. And even an area of the brain effectively receiving blood can still be dysfunctional. Therefore, a normal CT Perfusion does not exclude the presence of important cognitive changes.

The only clinically indicated use of CT Perfusion is for people presenting with ischemic stroke.[19] CT Perfusion can show that an area of the brain is not receiving enough blood because of the stroke. CT perfusion can also show if parts of the brain might recover if more blood supply could be established. CTP is only supported by the Centers for Medicare and Medicaid (CMS) for the workup of stroke (CMS policy A58152)[20] and its syndromes. Further, CT Perfusion is not recommended nor used as a standard tool in assessments of cognitive impairment, including MCI or dementia. As noted below, there are no guidelines anywhere recommending its use in the diagnostic workup of these conditions. Moreover, the primary use of CTP, which Dr. Filler notes in several references, relates to cerebrovascular perfusion, but stroke was not ever mentioned as being considered in the differential diagnosis of any of the physicians evaluating Judge Newman, including Dr. Filler. CTP cannot independently diagnose or clarify the nature of cognitive impairment in someone such as Judge Newman. CTP only provides a biological indication that tissue is getting perfused with blood.

CT Perfusion is infrequently used in research settings exploring cognitive aging. The research papers cited by Dr. Filler appear to reflect what amounts to most of the world's literature on the use of CTP in humans for diagnosing dementia, which itself is very limited. To be clear, this handful of articles does not establish what Dr. Filler states, "that Perfusion CT can be used to identify or rule out the presence of dementia or cognitive impairment on a reliable objective basis." These few articles also do not support Dr. Filler's claim of "substantial medical literature that convincingly supports the proposition that high speed perfusion brain imaging supplants" other established tests and approaches in diagnosing cognitive impairment, including neuropsychological testing. In several instances, articles cited by Dr. Filler did not directly study humans or did not involve CT Perfusion. The key articles cited by Dr. Filler are summarized below.

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[18] A standard CT scan should not be confused with a CT Perfusion scan. A CT scan is dedicated to studying the structural elements of the brain and is capable of identifying tumors, strokes, and atrophy patterns, among other changes. A CT Perfusion uses the same radiological platform but is focused on understanding how blood perfuses the brain or if there are any deficits in this regard, particularly as is found in someone with acute ischemic stroke. As reiterated in footnote 39, it is recognized that Judge Newman's pacemaker may not have been compatible with an MRI, and it is common practice for such persons to undergo a standard head CT in the place of an MRI for the purposes of having a structural diagnostic brain image.

[19] Shoor P, Chow DS, Lignelli A. Chapter 21: "Computed Tomography." *In: Merritt's Neurology 14th Edition* (Eds. Louis, Mayer, and Noble, Wolters-Kluwer, 2021)

[20] CMS.gov Billing and Coding: Computed Tomography Cerebral Perfusion Analysis (CTP, policy A58152). https://www.cms.gov/medicare-coverage-database/view/article.aspx?articleId=58152

Several articles comprise a background to Dr. Filler's review of human studies and include the following:

1. Kisler et al. is a review of brain blood vessel anatomy and physiology. The article did not directly study any human individuals.[21]
2. The study of Ruitenberg et al. did not involve CT Perfusion scans.[22]
3. The study of Togao et al. did not study or involve CT Perfusion scans.[23]
4. The study of Pasternak et al. also did not study or involve CT Perfusion scans.[24]
5. The study of Hart et al. did not study or involve CT Perfusion scans.[25]
6. Latchaw et al. is a summary of various imaging modalities for the diagnosis of cerebral ischemia—stroke.[26]

The primary human studies cited by Dr. Filler in his report are as follows:

7. The study of Metting et al. involved CT Perfusion on 18 persons with a mean age of 35y who recently experienced traumatic brain injury (TBI).[27] That population has no relevance to Judge Newman since she is not known to have experienced TBI. Moreover, when Dr. Filler stated that this study included 191 persons, he did not mention that only 18 ended up having CT Perfusion brain imaging done.
8. Streitparth et al. is a study of 55 persons including 13 with severe dementia, 36 with mild dementia, and 6 who were cognitively normal, overall average age of 82y.[28] It did not study persons with MCI and demographics such as education are not mentioned. This is a small pilot study and limited inferences can be drawn.[29]
9. Dash et al. is a study of 25 persons with dementia (10 with Alzheimer's disease and 15 with vascular dementia) along with 25 cognitively healthy persons; mean age was 61-62y.[30] It did not study persons with MCI. Other demographics such as

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[21] Kisler K et al. "Cerebral blood flow regulation and neurovascular dysfunction in Alzheimer disease." Nat Rev Neurosci. 2017 Jul;18(7):419-434.
[22] Ruitenberg A et al. "Cerebral hypoperfusion and clinical onset of dementia: the Rotterdam Study." *Ann Neurol*. 2005 Jun;57(6):789-94.
[23] Togao O et al. "Arterial Spin Labeling-Based MR Angiography for Cerebrovascular Diseases: Principles and Clinical Applications." J Magn Reson Imaging. 2024 Oct;60(4):1305-1324.
[24] Pasternak M et al. "Longitudinal cerebral perfusion in presymptomatic genetic frontotemporal dementia: GENFI results." *Alzheimers Dement*. 2024 May;20(5):3525-3542.
[25] Hart J et al. "Neuroimaging of cognitive dysfunction and depression in aging retired National Football League players: a cross-sectional study." JAMA Neurol. 2013 Mar 1;70(3):326-35.
[26] Latchaw RE et al. "Guidelines and recommendations for perfusion imaging in cerebral ischemia: A scientific statement for healthcare professionals by the writing group on perfusion imaging, from the Council on Cardiovascular Radiology of the American Heart Association." *Stroke*. 2003 Apr;34(4):1084-104.
[27] Metting Z et al. "Cerebral perfusion and neuropsychological follow up in mild traumatic brain injury: acute versus chronic disturbances?" *Brain Cogn*. 2014 Apr:86:24-31.
[28] Streitparth F et al. [Diagnostic value of multislice perfusion CT in dementia patients] *Radiologe*. 2008 Feb;48(2):175-83. [primary Article is in German; I reviewed an English translation using Google Translate]
[29] Aside from the points made, this article is only available in German. I relied on Google translate to provide demographic information not otherwise included in the article's abstract.
[30] Dash S et al. "Perfusion CT imaging as a diagnostic and prognostic tool for dementia: prospective case-control study." *Postgrad Med J*. 2023 May 22;99(1170):318-325.

education are not mentioned. This is also a small pilot study, focused on 10 people with Alzheimer's disease and 15 with vascular dementia, and limited inferences can be drawn.

10. Zhang et al. is the only cited and reasonably designed study of CT Perfusion. The study conducted CTP on 30 persons with MCI (average age 70y), 100 persons with dementia (average age 70y), and 50 without cognitive impairment (average age 68y).[31] Its primary limitations are its generalizability, as it was conducted at a single center in China. The stated demographics for age and education would be unlikely to include someone similar to Judge Newman. Importantly, as noted below, Dr. Filler also incorrectly applies the key study findings because of a major error in his anatomical identification.

Altogether in the literature Dr. Filler cites, there were just 3 relevant human studies of CTP comprised of 174 persons with dementia, 30 persons with MCI, and 81 who were cognitively normal. This is a far cry from the amount of research necessary to provide clear and convincing evidence to establish imaging studies (or other tests) be recommended for use in the evaluation of cognitive aging disorders. In my own search of the medical literature as indexed in the National Library of Medicine (pubmed.gov) and Google Scholar, there was little else beyond what Dr. Filler cited. A standard approach in searching the medical literature involves the use of National Library of Medicine's Medical Subject Headings (MeSH, pertinent in this case are MeSH terms cognitive dysfunction, Alzheimer's disease, human, computed tomography) as well as more specific search terms when called for, and in this case included "mild cognitive impairment," "Alzheimer disease," "Dementia," "CT Perfusion," "Perfusion CT."[32] Each search was then limited further to human studies. Taking this approach found no additional studies using CTP in MCI. There were 4 additional studies involving dementia or Alzheimer's disease and CTP—2 studies each from two research groups. Because it appears each group used the same or largely overlapping persons between their two publications, functionally this yields just two groups of study participants evaluated using CTP and not otherwise cited by Dr. Filler. One of the studies, led by Zhen Tang of China, used CT Perfusion imaging[33] in a single site study which included 52 persons with AD, 43 with vascular dementia compared with 30 healthy subjects; overall study participants ranged in age from 50-92 years. Any study of this small size is considered pilot data and its generalizability is limited. As an example in this case, all persons included in the study were younger than Judge Newman. In the other pair of research papers, both led by Anna Zimny of Poland, CTP was used to explore if it may differentiate causes of dementia in 41 persons with dementia[34] or the degree of cognitive impairment among 64 persons,[35] all of whom also had dementia. Neither study from the Zimny research group included persons with MCI or

[31] Zhang et al. "The value of whole-brain CT perfusion imaging and CT angiography using a 320-slice CT scanner in the diagnosis of MCI and AD patients." *Eur Radiol.* 2017 Nov;27(11):4756-4766.
[32] Medical literature searches were conducted 1/21/2025.
[33] Tang Z et al. "Low-dose cerebral CT perfusion imaging (CTPI) of senile dementia: diagnostic performance." *Arch Gerontol Geriatr.* 2013 Jan-Feb;56(1):61-7.
[34] Zimny A et al. "Does perfusion CT enable differentiating Alzheimer's disease from vascular dementia and mixed dementia? A preliminary report." *J Neurol Sci.* 2007 Jun 15;257(1-2):114-20.
[35] Zimny A et al. "Analysis of correlation between the degree of cognitive impairment and the results of perfusion CT in patients with dementia." *Med Sci Monit.* 2007 May:13 Suppl 1:23-30.

persons who were cognitively normal. Even after including the two additional studies of CTP identified in my literature search, combining these with Dr. Filler's literature review still only amounts to five research teams who have studied CTP in 333 persons with dementia, 30 persons with MCI, and 111 who were cognitively normal. This summary of evidence remains quite small and is not sufficient to inform practice or guidelines.

As a point of comparison, using a similar literature search strategy (using the above approach, substituting CTP with "FDG-PET" and "amyloid-PET"), FDG-PET and Alzheimer's disease yields 1,178 human studies, FDG-PET and MCI yields 593 studies; Amyloid-PET and Alzheimer's disease yields 1,037 human studies, and amyloid-PET and MCI yields 385 human studies. In the field of medicine, it takes a substantial number of studies—hundreds to thousands, not single digits—to determine if a diagnostic test ought to become part of standard clinical practice. In order for FDG-PET[36] and amyloid-PET[37] to become part of standard practice, each technique was developed through hundreds of studies involving thousands of patients to eventually determine the clinical utility, applicability, and generalizability. Most recently, a single amyloid-PET study involved more than 11,000 participants in America[38] and was a major factor in determining not only clinical practice but also CMS coverage determinations for its use in the workup of MCI and early-stage dementia due to Alzheimer's disease. It requires an overwhelming amount of convincing evidence in order for any diagnostic test to be included in major diagnostic criteria or standard evaluative recommendations, as has been the case for MRI[39] and brain PET imaging.[40]

For all these reasons, CT perfusion is not part of any guidelines for use in evaluations of cognitive aging disorders such as MCI[41] or dementia,[42] or for Alzheimer's disease[43,44] or

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[36] Ramusino MC et al. "Diagnostic performance of molecular imaging methods in predicting the progression from mild cognitive impairment to dementia: an updated systematic review." *Eur J Nucl Med Mol Imaging*. 2024 Jun;51(7):1876-1890.

[37] Rabinovici G et al. "Association of Amyloid Positron Emission Tomography With Subsequent Change in Clinical Management Among Medicare Beneficiaries With Mild Cognitive Impairment or Dementia." *JAMA*. 2019 Apr 2;321(13):1286-1294.

[38] Rabinovici et al.

[39] It is recognized that Judge Newman's pacemaker may not have been compatible with an MRI, and it is common practice for such persons to undergo a head CT in the place of an MRI for the purposes of having a structural diagnostic brain image. While the resolution of a head CT is not as refined as a brain MRI, in persons experiencing cognitive impairment, a head CT routinely eliminates several diagnostic considerations such as a large stroke, brain tumor, or hydrocephalus.

[40] Jack et al. "NIA-AA Research Framework: Toward a biological definition of Alzheimer's disease" *Alzheimers Dement*. 2018 Apr;14(4):535-562.

[41] Petersen RC et al. "Practice parameter: early detection of dementia: mild cognitive impairment (an evidence-based review). Report of the Quality Standards Subcommittee of the American Academy of Neurology." *Neurology*. 2001 May 8;56(9):1133-42.

[42] Knopman, David S., et al. "Practice parameter: Diagnosis of dementia (an evidence-based review) Report of the Quality Standards Subcommittee of the American Academy of Neurology." *Neurology* 56.9 (2001): 1143-1153.

[43] Jack Jr, Clifford R., et al. "Revised criteria for diagnosis and staging of Alzheimer's disease: Alzheimer's Association Workgroup." *Alzheimer's & Dementia* 20.8 (2024): 5143-5169.

[44]Dubois, Bruno, et al. "Alzheimer disease as a clinical-biological construct—an International Working Group recommendation." *JAMA Neurology*. 2024 Dec 1;81(12):1304-1311.

related dementias.[45,46,47,48] In all of these guidelines which essentially guide practice worldwide for diagnosing cognitive impairment, CT perfusion is mentioned only once, and specifically in the context of diagnosing acute ischemic stroke.[49] While CTP may be of interest as a research tool based on a handful of small studies, it is clear that it has no place in standard clinical practice in evaluating persons with cognitive impairment. There is simply insufficient evidence to support the use of CTP in the diagnosis of persons with MCI or dementia. This is why CTP is not recommended in the diagnostic workup of persons such as Judge Newman. For the reasons explained above, there was no indication to even consider ordering a CTP for Judge Newman. Her CTP was unnecessary and is uninformative.

Individuals with concern for cognitive impairment increasingly undergo additional biomarker-based testing (including cerebrospinal fluid analyses or molecular PET imaging) to determine a reasonable likelihood of the biological basis of cognitive impairment when identified. No diagnostic criteria, including the criteria cited above, advocate for CT Perfusion being part of biomarker-based testing among persons with suspected cognitive impairment or dementia.

Dr. Filler stated that Dr. Reza Taheri found the CTP "as being completely normal." Those words do not appear in Dr. Taheri's report. Instead, there is a comment about the inclusion of automated software which is used to explore for potential differences or mismatches in blood perfusion when comparing one side of the brain to the other, but the software found no differences. Dr. Taheri provided no broader conclusion about the scan and no made no mention about impressions relative to memory or aging.

Dr. Filler states "Moreover, there is exceptionally high flow bilaterally in the hippocampus which rules out all of the known causes of MCI (mild cognitive impairment) and any dementias." I disagree with that conclusion, based on several errors made by Dr. Filler. First, as explained above, even if a CTP demonstrates present blood flow, that does not rule out cognitive impairment.

Second, Dr. Filler seems to have misread and mislabeled a key image of Judge Newman's CTP. At the beginning of Dr. Filler's report, he presents the image below with labels he has superimposed: "Red Colorization by i-RAPID IschemaView Analysis Showing High Focal Blood Flow In Right Hippocampal Region" and "High Focal Blood Flow In Left Hippocampal Region." In that figure, what he has labeled as hippocampal regions simply cannot be the hippocampal regions. That is because the hippocampus/hippocampal regions are several centimeters away from the area highlighted by Dr. Filler. It is anatomically not possible for the hippocampus to be where he says it is, and is not even visible on the image he shows. Instead, his arrow is pointing to very different areas of the brain called the insular cortex. It is also possible his arrows are pointing to an area adjacent to the insular cortex

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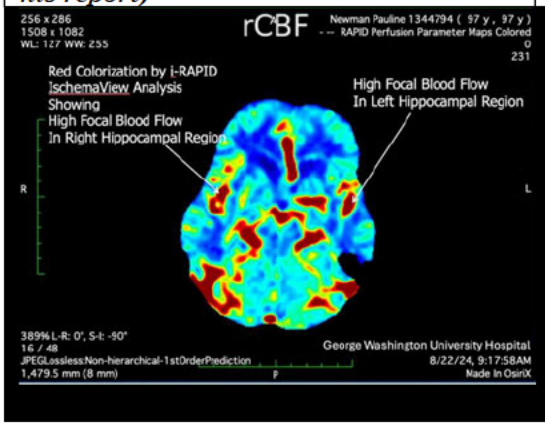
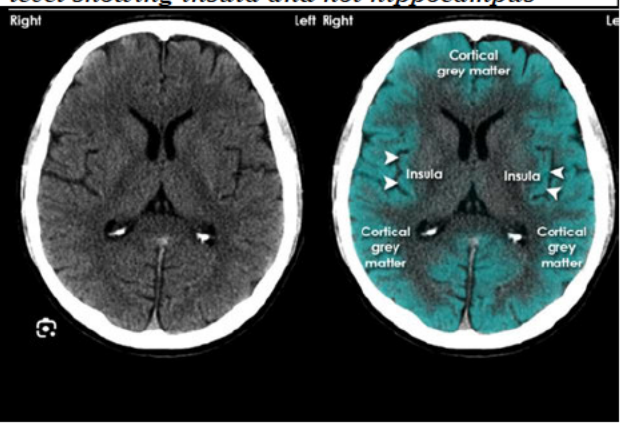
[45] Grossman M et al. "Frontotemporal lobar degeneration." *Nat Rev Dis Primers.* 2023 Aug 10;9(1):40.
[46] McKeith IG et al. "Diagnosis and management of dementia with Lewy bodies: Fourth consensus report of the DLB Consortium." *Neurology*. 2017 Jul 4;89(1):88-100.
[47] Aarsland D et al. "Parkinson disease-associated cognitive impairment." *Nat Rev Dis Primers*. 2021 Jul 1;7(1):47.
[48] Sachdev et al. "Diagnostic criteria for vascular cognitive disorders: a VASCOG statement." *Alzheimer Dis Assoc Disord.* 2014 Jul-Sep;28(3):206-18.
[49] Sachdev et al.

called the superior temporal gyrus of the temporal lobe. Regardless, neither brain area includes the main hippocampal region. Below is the image included by Dr. Filler, along with a structural head CT reference image at approximately the same level.[50]

Image provided by Dr. Filler (page 1 of his report)	*Reference CT image at approximately the same level showing insula and not hippocampus*
	

Third, in contrast to how Dr. Filler used the imaging software "i-RAPID IschemaView Analysis" (formally called "iSchema View Rapid"), the Food and Drug Administration (FDA) has only permitted the marketing and use of this CT Perfusion software for "physicians to aid in the selection of acute stroke patients (with known occlusion of the intracranial internal carotid artery or proximal middle cerebral artery)." There is no evidence that Dr. Filler was concerned that Judge Newman had experienced an ischemic stroke or occlusion of intracranial internal carotid artery or proximal middle cerebral artery. The FDA has not permitted the marketing or use of iSchema View Rapid software as a diagnostic tool for cognitive impairment or hippocampal function. Dr. Filler's use of the software in analyzing Judge Newman's CTP study to determine cognitive performance or hippocampal function is not appropriate based on FDA's clearly stated scope of marketing and use of the software.[51] It is recognized in medicine that physicians may use medications or apply studies in so-called "off-label" conditions, but the application of CTP to Judge Newman not only has no basis in FDA-approved uses, but also no established use of CTP or this software in clinical guidelines or standard practice to even potentially support an off-label use of CTP or this analytic software in her situation.

Dr. Filler's statement that Judge Newman's CTP results obviate any need for a neuropsychology test battery is incorrect. My review of the affidavits describing Judge Newman's progressive cognitive and behavioral changes demonstrate concerning changes which could be clarified through neuropsychological testing. Neuropsychological testing remains standard practice in clinical and research settings to determine the nature and extent of cognitive problems. Neuropsychological testing uses multiple standardized instruments, with known performance metrics across a wide array of persons from differing backgrounds. Adjustments are possible for age and education and provide an opportunity for comparing performance of an individual against their peers. Testing derives summary

[50] Radiology Masterclass, accessed 1/22/2025 https://www.radiologymasterclass.co.uk/tutorials/ct/ct_brain_anatomy/ct_brain_anatomy_grey_matter

[51] Response to iSchema View Inc's 510(k) submission by the FDA, March 15, 2022. https://www.accessdata.fda.gov/cdrh_docs/pdf21/K213165.pdf

assessments of working and long-term memory, including verbal and non-verbal recall, language abilities, executive function, visuospatial performance, and processing speed, all of which are adjusted for age and education history. Further, formal assessments of mood and behavior can provide insights into behavioral aspects which often coincide with cognitive decline. Neuropsychologist Dr. Yaakov Stern, whose research has been cited more than 150,000 times, writes in his chapter in the *Merritt's Neurology* textbook:[52]

> "Neuropsychological testing can assist in the diagnosis of dementia, in evaluating or quantifying cognition and behavior in development, brain diseases, and clinical treatment. It is also incorporated into research that evaluates cognitive functions in healthy and diseased individuals.
>
> Conditions that affect the brain often cause cognitive, motor, or behavioral impairment that can be detected by appropriately designed tests. Defective performance on a test and certain patterns of test performance may suggest specific pathology. Alternatively, patients with known brain changes may be assessed to determine how the damaged brain areas affect specific cognitive functions. Before relating test performance to brain dysfunction, however, other factors that affect test performance must be considered.
>
> Typically, test performance is compared with normative values derived from populations similar to the patient in age, education, socioeconomic background, and other variables. Scores significantly below the mean expected values imply impaired performance. Performance sometimes can be evaluated by assumptions about what might be expected from the average person (eg, repeating simple sentences or simple learning and remembering)."

Finally, Dr. Filler summarizes 2,000 pages of prior medical records which were not separately provided. In that review, Dr. Filler did not focus on several important medical problems, each of which could contribute to cognitive impairment. These include a history of [redacted]. It is known that poor [redacted] function can cause confusion and this should have been explored further by Dr. Filler. Several medications in her history have known cognitive side effects including [redacted]. These conditions and the use of these medications should have prompted Dr. Filler to explore their impact on cognitive function. Because these records were not provided directly for my review, I am unable to determine further if these may be contributing factors.

IV. Evaluative summary

Based on the information I have reviewed, particularly because of the observed decline included in the affidavits, combined with the low MoCA performance, it is my professional opinion that neuropsychological testing for Judge Newman is warranted.

[52] Stern Y. Chapter 31: Neuropsychological Evaluation. *In: Merritt's Neurology 14th Edition* (Eds. Louis, Mayer, and Noble, Wolters-Kluwer, 2021)

As explained, a diagnosis of MCI or dementia cannot be made on the basis of neuroimaging alone. Instead, a diagnosis of MCI and dementia is made based on clinical history and examination, often in advance of additional diagnostic testing.

As was done with Dr. Carney's evaluation, a commonly used instrument, and one I have used thousands of times in my practice, is the clinical dementia rating scale (CDR).[53] The assessment applies best information to 6 key areas including memory, orientation, judgement and problem solving, community affairs, home and hobbies, and personal care. A summary impression is derived through an established, highly validated algorithm which provides a reasonable likelihood that someone is normal, experiencing MCI, or has dementia. Accurate derivation requires completion of formal training which I have done. Several scores are derived including a sum of boxes and an overall score, the latter of which requires application of the CDR algorithm/calculator available online through the National Alzheimer Coordinating Center.[54] Aside from its use as a standard outcome in dementia treatment trials and research, it is part of a reporting requirement for cognitive assessments as determined by CMS[55] for persons being considered for Alzheimer monoclonal antibody treatments, as well as entering into the CMS Guiding an Improved Dementia Experience (GUIDE) Model.[56]

As noted above, I have not personally interviewed or examined Judge Newman, but taking all evidence into account, it is possible to construct a CDR for her as could have been done at each evaluation. Taking this approach, CDR domain, summary, and global scores can be reasonably determined as shown in Figure. In this figure I have circled in red what should have been selected.

[53] Burke WJ et al. "Reliability of the Washington University Clinical Dementia Rating." *Arch Neurol*. 1988 Jan;45(1):31-2. doi: 10.1001/archneur.1988.00520250037015.
[54] CDR Dementia Staging Instrument Calculator
https://naccdata.org/data-collection/tools-calculators/cdr
[55] Monoclonal Antibodies Directed Against Amyloid for the Treatment of Alzheimer's Disease CED Study Registry
https://qualitynet.cms.gov/alzheimers-ced-registry
[56] CMS.gov GUIDE Model Frequently Asked Questions
https://www.cms.gov/priorities/innovation/guide/faqs

Please enter score below:	IMPAIRMENT				
	None — 0	Questionable — 0.5	Mild — 1	Moderate — 2	Severe — 3
1. Memory 0.5	No memory loss, or slight inconsistent forgetfulness	Consistent slight forgetfulness; partial recollection of events; "benign" forgetfulness	Moderate memory loss, more marked for recent events; defect interferes with everyday activities	Severe memory loss; only highly learned material retained; new material rapidly lost	Severe memory loss; only fragments remain
2. Orientation 0.0	Fully oriented	Fully oriented except for slight difficulty with time relationships	Moderate difficulty with time relationships; oriented for place at examination; may have geographic disorientation elsewhere	Severe difficulty with time relationships; usually disoriented to time, often to place	Oriented to person only
3. Judgment and problem solving 0.5	Solves everyday problems, handles business and financial affairs well; judgment good in relation to past performance	Slight impairment in solving problems, similarities, and differences	Moderate difficulty in handling problems, similarities, and differences; social judgment usually maintained	Severely impaired in handling problems, similarities, and differences; social judgment usually impaired	Unable to make judgments or solve problems
4. Community affairs 0.0	Independent function at usual level in job, shopping, volunteer and social groups	Slight impairment in these activities	Unable to function independently at these activities, although may still be engaged in some; appears normal to casual inspection	No pretense of independent function outside the home; appears well enough to be taken to functions outside the family home	No pretense of independent function outside the home; appears too ill to be taken to functions outside the family home
5. Home and hobbies 0.0	Life at home, hobbies, and intellectual interests well maintained	Life at home, hobbies, and intellectual interests slightly impaired	Mild but definite impairment of function at home; more difficult chores abandoned; more complicated hobbies and interests abandoned	Only simple chores preserved; very restricted interests, poorly maintained	No significant function in the home
6. Personal care 0.0	Fully capable of self-care (= 0)		Needs prompting	Requires assistance in dressing, hygiene, keeping of personal effects	Requires much help with personal care; frequent incontinence
7. 1.0	CDR SUM OF BOXES				
8. 0.5	GLOBAL CDR				

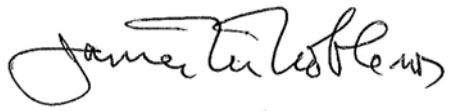
With respect to memory, there is strong evidence in the history and on the MoCA examination that demonstrates changes in memory at least at the *0.5* level ("consistent slight forgetfulness; partial recollection of events; "benign" forgetfulness") and potentially at the *1* level ("moderate memory loss, more marked for recent events; defect interferes with everyday activities"). There is also strong evidence based on observations at work that her judgement and problem solving is also at least questionable or *0.5* ("slight impairment solving problems, similarities, differences"). There is no evidence in the materials I have reviewed of impairment in the other domains (orientation, community affairs, home and hobbies, and personal care). However, there is inadequate information to make a determination about her level of independence with regard to community affairs, home and hobbies, or personal care. Despite this missing information, there remains a significant concern about her cognitive abilities. Even assuming no impairment in those other domains, and just taking into account the memory and judgement and problem solving, the CDR sum of boxes is 1.0 and her global CDR is calculated to be 0.5. These scores further support that the correct diagnosis should have been MCI.

A standard diagnostic workup plan for persons with presumed or possible MCI is to pursue neuropsychological testing which may confirm or refute points above, especially when done in conjunction with other tests such as structural brain imaging (MRI or CT; noting again that a structural CT is distinct from a Perfusion CT) along with additional biomarker diagnostic tools including amyloid-PET and CSF sampling.[57] Judge Newman never had any of these tests. Neuropsychological testing would also be the best tool to inform the likelihood that she would be able to perform her job as a judge.

[57] Honig LS, Salardini A, Kreisl WC, and Noble JM. Chapter 50: "Mild Cognitive Impairment." *In: Merritt's Neurology 14th Edition* (Eds. Louis, Mayer, and Noble, Wolters-Kluwer, 2021)

CONCLUSIONS

Taken together, there is clear evidence that Judge Newman forgot major events at work, had clear difficulty understanding complex situations at her job, and demonstrated meaningful impairments on both the MoCA and 3MS. In my professional opinion, based on the information that is available, in the standard of practice it cannot be said that her cognition is normal. A diagnostic workup including neuropsychological testing should have been recommended.



James M. Noble, MD, MS, CPH, FAAN

January 30, 2025

Appendix of Materials Analyzed

Materials Submitted by Judge Newman

Title
Declaration of Ted L. Rothstein, M.D.*
Report of Independent Medical Examination of Pauline Newman by Regina M. Carney, M.D.*
24-9-17 Affidavit of Aaron G Filler re Hon. Pauline Newman
Newman_Pauline 8-24-2024 Evaluation Report with Exhibits
2024-8-24 Newman_Pauline Eval from OneNote
2024-8-24 Newman_Pauline Exam from OneNote
GW Report on Perfusion CT
Perfusion CT Scans hyperlinked to Judge Newman's Response to Special Committee's Order of October 21, 2024
Motion to Reconsider 09.25.24_Final

* includes exhibits.

Index of Materials Gathered By the Special Committee

Orders:

- September 20, 2023 Judicial Council Order (PUBLIC)
- September 6, 2024 Order (PUBLIC)

Title
Affidavit of [redacted]
Affidavit of [redacted] – April 2023
Affidavit of [redacted] – May 2023
Affidavit of [redacted]
Affidavit of [redacted] *
Declaration of [redacted] **
Affidavit of [redacted] **
Affidavit of [redacted] *
Affidavit of [redacted]
Affidavit of [redacted]
Affidavit of [redacted]
Affidavit of [redacted]
Affidavit of [redacted]
Affidavit of [redacted]
Exhibit 1 (Email from Chief Judge Moore re [redacted])
Exhibit 2 (Email from Judge Newman to Chief Judge Moore re [redacted])
Exhibit 3 (Email from Judge Newman to Chief Judge Moore re Support Services)
Exhibit 4 (Email exchange between Judge Newman to Chief Judge Moore re JA/law clerk positions)
Exhibit 5 (Email exchange between [redacted] and Judge Newman)

Exhibit 6 (Email from Judge Newman to Chief Judge Moore re return of her chambers computer)
Exhibit 7 (Email exchange between [redacted] and [redacted] re April 2023 Court Week)

* includes email exhibits.

** includes docket exhibits.

CURRICULUM VITAE

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Date of Preparation: January 28, 2025

Name: James M. Noble, MD, MS, CPH, FAAN
Place of Birth: Atlanta, GA
Date of Birth: June 19, 1976
Citizenship: USA

Academic Appointments, Hospital Appointments, and Other Work Experience

12/2024-present	**Columbia University Irving Medical Center** Professor of Neurology (in the Taub Institute & the Sergievsky Center) at CUMC	New York, NY
01/2020-present	**Columbia University Irving Medical Center** Clinical Core Leader, Alzheimer Disease Research Center	New York, NY
07/2018-11/2024	**Columbia University Irving Medical Center** Associate Professor of Neurology (in the Taub Institute & the Sergievsky Center) at CUMC	New York, NY
05/2011-present	**Arts & Minds, Inc. (501c3) artsandminds.org** President and Co-Founder (Volunteer position) Museum-based visual arts programs for dementia patients & caregivers	New York, NY
07/2008 - 6/2018	**Columbia University Irving Medical Center** Assistant Professor of Neurology (in the Taub Institute & the Sergievsky Center) at CUMC	New York, NY
07/2009-12/2016	**Columbia University College of Physicians & Surgeons** Neurology Clerkship Director	New York, NY

07/2007- 06/2011	**Harlem Hospital Center** Assistant Attending Neurologist	New York, NY

Education

08/2006- 05/2008	**Columbia University** **Mailman School of Public Health** Master of Science, Epidemiology, May 2008	New York, NY
08/1998- 05/2002	**Emory University School of Medicine** MD, May 2002	Atlanta, GA
08/1994- 05/1998	**Vanderbilt University** Bachelor of Science, Math and Chemistry, May 1998 *magna cum laude*	Nashville, TN

Training

07/2006- 06/2008	**Columbia University Medical Center** **Department of Neurology & G. H. Sergievsky Center** Fellowship, Aging and Dementia & Neuroepidemiology	New York, NY
07/2005- 06/2006	**Columbia University Medical Center** **Department of Neurology** Neurology Co-Chief Resident	New York, NY
07/2003- 06/2006	**Columbia University Medical Center** **Department of Neurology** Neurology Residency	New York, NY
06/2002- 06/2003	**Columbia-Presbyterian Medical Center** **Department of Medicine** Internal Medicine Preliminary Internship	New York, NY

Gaps in work/training/education:

N/A

Licensure and Board Certification

10/2008- 1/2026	**National Board of Public Health Examiners (NBPHE)** Certification in Public Health (CPH) #20070713279
11/2008- 11/2028	**United Council for Neurologic Subspecialties (UCNS)** Behavioral Neurology and Neuropsychiatry

	#BNNP00326-08	
05/2007- 12/2027	**American Board of Psychiatry and Neurology (ABPN)** Neurology #54098	
05/2004- Present	**New York State Education Department, Office of Professions** Medical License #232438	New York

Honors & Awards

9/2024	**Columbia University Irving Medical Center** Richard Mayeux Award (5th recipient)
1/2024- present	**Columbia University Irving Medical Center** Academy of Community and Public Service
3/2021	**American Academy of Neurology** 2021 A.B. Baker Teacher Recognition Award
9/2018	**Mailman School of Public Health Alumni Association** Outstanding Recent Alumni Award
4/2018- present	**American Academy of Neurology** Fellow
11/2012- Present	**Columbia University, College of Physicians and Surgeons** Virginia Apgar Teaching Academy
9/2012- 06/2013	**American Academy of Neurology** Selection, Emerging Leaders Forum 2012-2013 (Inaugural year)
6/2011	**Department of Neurology, Columbia University Medical Center** Stephen Q. Shafer Award for Humanism in Neurology
5/2008	**Columbia University, Mailman School of Public Health** Anna C. Gelman Award for Excellence in Epidemiology

Academic Service

11/2024	**National Institutes of Health** NV-C(10) Small Business Review Panel Reviewer/Committee Member

11/2024	**National Institutes of Health** NIH Special Emphasis Panel ZAG1 ZIJ-S (J1) – (NIA T35 program review) Reviewer/Committee Member
10/2024	**National Institutes of Health** NIH Special Emphasis Panel R25: Postbaccalaureate and Summer Research Education Reviewer/Committee Member
3/2024	**National Health and Medical Research Council** (Australian Federal Government) Medical Research Future Fund TBI Stream 1 & 2 Invited Panel Reviewer
7/2023-present	**National Institutes of Health** NIH Special Emphasis Panel (F31 predoc, F32 postdoc, F31 diversity predoc, F30 dual degree, R36 dissertation grants) ZRG1 F18-E (20) L Reviewer/Committee Member, annual/semi-annual/ad hoc
9/2022-8/2024	**Study Safety Officer** R01AG060929 (PI: Yoon): Using Twitter to Enhance the Social Support of Hispanic and Black Dementia Caregivers (Tweet-SS)
9/2019-present	**College of Physicians & Surgeons** Interviewer, Admissions Committee
9/2018-present	**Big Ten–Ivy League Traumatic Brain Injury Research Collaboration** Member (Ivy League Representative), Study Advisory Committee
07/2017-present	**College of Physicians & Surgeons** Associate Director, Preclinical Neuroscience Course
3/2017-7/2019	**American Academy of Neurology** Leader, Undergraduate Education Subcommittee Scholarship/Award Review Workgroup
11/2016-6/2017	**College of Physicians & Surgeons** Member, Liaison Committee on Medical Education (LCME), Committee on Education
10/2016-present	**Brain Injury Association of New York** New York State Concussion Initiative Advisory Committee Member

9/2016- 1/2018	**Columbia University College of Physicians and Surgeons** Neural Science Curriculum Task Force (in advance of co-director of new course beginning 1/2018)
12/2014- 02/2016	**Institute of Medicine/National Academy of Medicine** Committee Member, *Gulf War & Health Volume 10: Update of Health Effects of Serving in the Gulf War*
10/2014- present	**National Institutes of Health** NIA Special Emphasis Panel (T32/T35 Training Grants) ZAG1 ZIJ-1 (J1)/ ZAG1 ZIJ-U (J4) Reviewer/Committee Member, annual/semi-annual/ad hoc
09/2014- 06/2017	**AAMC (Association of American Medical Colleges)**, Core Entrustable Professional Activities (EPAs) for Entering Residency Pilot Cohort Member, Columbia University's P&S 4-member working group
08/2014- 11/2014	**American Academy of Neurology** Reviewer for 2015 Annual Meeting Research Methodology, Education, and History abstracts
08/2014- 07/2018	**Big 10-Ivy League Conference** Chair, Funding Subcommittee (sunsetted 7/2018)
07/2014- 01/2015	**Columbia University College of Physicians and Surgeons** Clinical Performance Evaluation task force meeting *Chair*
9/2013- 10/2013	**American Museum of Natural History, New York, NY** Co-Chair: "Sackler Brain Bench: Neuroscience of Sports: Your Brain in Action"
7/2013	**French National Research Agency (ANR)/ General Directorate for Healthcare Provision** Programme de Recherche Translationnelle en Santé (PRTS) Invited Grant reviewer
04/2013- present	**American Academy of Neurology** Reviewer, Preclinical Summer Research Program
2013-2018	**American Academy of Neurology** Member, Undergraduate Education Subcommittee
01/2013- present	**New York State Athletics Commission**

	Member, Medical Advisory Board (supervises professional combat sports-boxing and MMA statewide)
11/2012-06/2013	**New York-Presbyterian Hospital** Primary Care Clinical Initiative *Working Group Member*
07/2012-2019	**Big 10-Ivy League Conference** **Committee on Institutional Cooperation (CIC)/Big 10 Academic Alliance** Concussion Research Collaborative Member, working group member of education and data subcommittees
04-07/2012, 2016	**Columbia University Medical Center, Department of Neurology** Compensation Program Committee *Working Group Member*
09/2011	**National Medical Research Council, Ministry of Health, Singapore** Clinician Scientist Grant Review
07/2011-12/2016	**Columbia University Medical Center, Department of Neurology** Education Committee *Member*
06/2011-12/2016	**Columbia University Medical Center, Department of Neurology** Executive Committee *Member*
08/2011-Present	**Columbia University Medical Center** Team Concussion, Department of Neurology *Director*
02/2011-05/2012	**Columbia University College of Physicians and Surgeons** Task Force on Honor Code *Member & Co-Author of New P&S Honor Code Implemented 8/2012*
01/2010-Present	**Columbia University Medical Center & Harlem Hospital Center** Hip Hop Public Health Center *Co-Chair of Research*
10/2009-07/2015	**Columbia University College of Physicians and Surgeons** Major Clinical Year Evaluation Subcommittee *Voting member*

07/2009- 12/2016	**Columbia University College of Physicians and Surgeons** Major Clinical Year Committee Member
07/2009- 12/2016	**Columbia University College of Physicians and Surgeons** Clinical Faculty Committee Voting Member
10/2008- present	**Columbia University, Department of Neurology** Residency Applicant Interview Committee
02/2009- 12/2010	**Harlem Hospital Center, Department of Neurology** Neurology Clinics *Chief*
07/2008- 12/2010	**Harlem Hospital Center, Department of Neurology** Performance Improvement Committee *Chairman*
08/2007- 12/2007	**Columbia University** Mind Brain Behavior Building Clinical Programming Committee *Member*

Professional Organizations and Societies

Memberships and Positions

1/2001-present	**American Academy of Neurology** Member

Consultative

10/2017-10/2023	**NoMo Diagnostics (nomodx.com)** Co-Founder and Chief Medical Advisor
11/2016-present	**New York Football Giants (NFL)** Independent Neurological Consultant (official position jointly approved by NFL and NFL Players Association)
8/2016-8/2018	**Prophase LLC (AD Trials secondary reviewer)**
9/2015-present	**Bats Toi-Mercado** Wrestling Headgear
7/2011	**The Cloisters Museum:** Sights & Scents Program for Dementia Patients & Caregivers

Journal Reviewer

(1st year encountered)	**Journal Name**
2023	Neuroepidemiology
2022	Journal of the American College of Cardiology
2022	Journal of Alzheimer's Disease
2018	Journal of Alzheimer's Disease Reports
2018	Journal of Research in Childhood Education
2018	Journal of Adolescent Health
2018	Alzheimer Disease & Associated Disorders - An International Journal
2018	Clinical Biomechanics
2018	Journal of Clinical Periodontology
2018	Journal of Periodontology
2017	BMJ Open
2017	Sports
2017	Neuroscience Letters
2017	Developmental Neuropsychology
2016	American Journal of Cardiology
2016	British Journal of Sports Medicine
2016	Patient Education and Counseling
2015	JAMA Neurology
2015	Canadian Geriatrics Journal
2015	Pediatrics
2015	The Physician and Sportsmedicine
2015	BMC Neurology
2015	Journal of Athletic Enhancement
2015	BMC Research Notes
2014	Journal of Science and Medicine in Sport
2014	Journal of Neurotrauma
2014	American Journal of Epidemiology
2014	PLoS One
2014	Neurobiology of Aging
2013	The Medical Letter
2013	Health Education & Behavior
2012	Journal of Clinical Periodontitis
2012	Journal of the American Geriatrics Society
2011	Journal of the International Neuropsychological Society
2011	European Journal of Neurology
2011	Journal of Pediatric Neurology
2010	American Journal of Public Health
2010	Journal of Neurological Sciences
2009	Neurology

2009	Journal of Neurology, Neurosurgery, and Psychiatry
2009	Alzheimer's & Dementia: The Journal of the Alzheimer's Association
2009	European Journal of Clinical Nutrition

Editorial Board

2023	Editorial Board, Journal of Clinical Periodontology (IF=6.7)
2018	Associate Editor, Journal of Alzheimer's Disease (IF=4.0)

Fellowship and Grant Support
Present Support

DATES	TITLE	ROLE	DIRECT	SOURCE
9/2024-present	R56AG082167 Multi-morbidity 3-City Alzheimer's Disease EHR Study (M3AD Study)	Co-I (PI: Desvarieux)	**3.87M**	NIA
6/2024-present	R01AG087496 Statistical Framework for Unraveling Age-Dependent Genetic Landscape of Alzheimer's Disease and Related Dementias: Harnessing Large-Scale EHR and DNA-Biobank Integration	Co-I (PI: Wei)	**481,558 (Y1)**	NIA
10/2022-present	R01 AG075083, Early Age-Related Hearing Loss Investigation (EARHLI): A Randomized Controlled Trial to Assess Mechanisms Linking Early Age-Related Hearing Loss and Alzheimer's Disease and Related Dementias	Co-I (PI: Golub)	**705,397 (Y1)**	NIA
9/2022-present	U19 AG078558 Alzheimer's Disease and Alzheimer's Disease Related Dementias in Prediabetes and Type 2 Diabetes: The Diabetes Prevention Program Outcomes Study AD/ADRD Project (DPPOS)	Core Leader (PI: Luchsinger)	**255,178 (Y1)**	NIA
7/2022-present	R01 AG063888, Longitudinal imaging of microglial activation in different clinical variants of Alzheimer's disease	Co-I (PI: Small)	**673,866 (Y3)**	NIA
09/2021-present	R01 AG076015, A Longitudinal Study of Periodontal Infections and Alzheimer's	PI	**$2.5M**	NIA

	Disease: The WHICAP Ancillary Study of Oral Health.			
9/2020-PRESENT	3P30AG066462-01S1 ADRC administrative supplement. Determinants of health seeking behaviors during COVID-19 in persons with MCI/ADRD and their caregivers.	PI (ADRC PI: Small)	**$153,635**	NIA
6/2020-4/2025	P30AG066462 ADRC Clinical Core	PI	**$3M**	NIA
05/2013-04/2028	T35 AG044303 The BRAIN (Brief Research in Aging and Interdisciplinary Neurosciences) Project *Citations: 2102, h-index 25, i-index 46, m-index 2.8 (using 2014 as index year)*	PI/Founding Co-Director	**$1.7M**	NIA

Past Support

8/2020-11/2022	1R21AG065753-01A1 Nurse's Documentation of Patient Diagnoses, Symptoms and Interventions For Home Care Patients with Alzheimer's Disease and Related Dementias: A Natural Language Processing Study	Co-I (PI Ryvicker)	**$157,642**	NIA
9/2018-8/2023	R01 NR017571 Effect of an integrated nutrition-math curriculum to improve food-purchasing behavior of children has completed the first phase of peer review.	Co-I (PI Williams)	**$2M**	NINR
09/2019 – 08/2022	GRANT12727289 Peer Reviewed Alzheimer's Research Program Convergence Science Research Award: Optogenetic Regulation of Phosphoinositide Metabolism in Susceptibility, Resistance, and Resiliency to Alzheimer's Disease—Associated Deficits and Pathology	Co-I (PI McIntire)	**$1.5M**	DoD

9/2017- 8/2023	R01AG054536 Old School Hip Hop	PI	**$2.7M**	NIA
9/2017- 8/2019	R56 DE026487-01A1 A combined genetic/epigenetic approach to study periodontitis susceptibility and pathobiology	Co-I (PI Papapanou)	**$156K**	NIDCR
9/2017- 8/2018	R56 AG056347-01 (Merrill and Ryvicker) A Longitudinal Network Study of Alzheimer's and Dementia Care in Relation to Disparities in Access and Outcomes	Co-I	**$572K**	NIA
4/2016- 2/2023	R01 NS067443 06-10 (PI Williams) Hip Hop Stroke Statewide Dissemination	Co-I	**$2.7M**	NINDS
07/2015- 09/2017	Columbia Coulter Program TEAM Helmet (Transmitted Electroencephalogram Activity Monitoring)	Co-PI	**$53K**	CU
10/2015- 12/2017	Brain MRI in Contact Sports	PI	**$10K**	Taub
09/2014- 08/2019	U54 NS081765 (PIs: Ogedegbe and Williams) Center for Stroke Disparities Solutions	Co-I	**$1.6M**	NINDS
10/2013- 08/2016	R56 DE022568 WHICAP-PERIoD: Periodontitis Exposure and Risk of Incident Dementia	PI Administrative PI	**$1M**	NIDCR
01/2012- 03/2014	*Assessing efficiency of learning the neurologic exam with a visual tracking device*	PI	**$9K**	AAN, CU
2/2011- 11/2024	U19 AG032438 Dominantly Inherited Alzheimer Network-Observational Study	Site PI (10/2016- 11/2024) (PI Bateman)		NIA

12/2010- 11/2015	R01 NS067443 01-05 (PI O. Williams) Hip Hop Stroke RCT	Co-I	**$3.4M**	NINDS
03/2010- 03/2011	*Serologic antibodies to periodontal pathogens in incident AD and matched controls*	PI	**$25K**	Taub
05/2009- 12/2010	*A Renaissance of the Mind: Healing Memories with Art in Central Harlem*	PI	**$11K**	Private
7/2008- 5/2020	P50 AG008702 Columbia University ADRC	Co-I (clinical core)		NIA
06/2008- 12/2010	New Investigator Research Grant *Arteriosclerosis and Alzheimer disease in a multiethnic cohort of autopsy brains.*	PI	**$87K**	Alz. Assn
07/2006- 06/2008	T32 NS07153 Public Health Service training grant	Fellowship		NINDS
07/2006- 06/2008	Charles L. and Anne L. Saunders Brown Fellowship	Fellowship		Private
04/2006	58th Annual Meeting Resident Scholarship *To* present *Stroke Associated with Cocaine Abuse: No Longer Just a Problem of the Young*	Co-I		AAN
09/2005	130th Annual Meeting Travel Scholarship To Present *Recombinant Tissue Plasminogen Activator (rtPA) for Acute Ischemic Stroke among African Americans in Central Harlem*	Co-I		ANA
07/2005- 06/2006	5 T32 NS007155-25 Public Health Service Grant (Residency Research Support)	Co-I		NINDS

Educational Contributions

Direct Teaching/Precepting/Supervising

	Specific Courses (All at Columbia University)	**Annual Enrollment:**
07/2017-present	MEDIM5108 The Body in Health & Disease (Preclinical Neuroscience Course) Co-Director, Co-developed new curriculum	170
09/2015-2020	BMEN 3910 Senior Design Class Biomedical Engineering Clinician Lecturer	35
09/2014-present	MEDIM6107 (P&S) The Body in Health & Disease Team & Problem-based learning Neuroscience cases	25
5/2012-2015	Art Matters: An Evening for Medical Students at the Frick Lecturer	25
08/2011-2016	CPMDN04P0 (P&S) Clinical Practice-IV	170
4/2011, 10/2017	The Cognitive Neuroscience of Aging (PSYCH G4222) Lecturer	20
07/2009-12/2016	NEURM 7201003 (P&S) Neurology clerkship (as Clerkship Director)	170
07/2009-3/2016	Neurology Subinternships Director (NU1P, NU01P)	12
03/2009-Present	P9493 Neuroepidemiology	15
07/2008-present	**Columbia University Irving Medical Center** Neurology Resident Inpatient/Outpatient Supervision	30
08/2007-06/2011	**Harlem Hospital Center** Inpatient Service, Consult, Outpatient Attending	35
1995-1997	**Vanderbilt University** Vanderbilt Student Volunteers for Science	30

Advising and Mentorship

9/2024-present **Matt Johnson, MD candidate, Columbia University Vagelos College of Physicians & Surgeons**
Matt is pursuing 4th year research (as his scholarly project) aiming to determine an automated way of collecting data on repetitive head impacts from publicly available sports databases comparing with athlete self-report.

5/2024-present **Jack Riley, MD candidate, Columbia University Vagelos College of Physicians & Surgeons**
Jack participated in the BRAIN T35 program in summer 2024, exploring adolescent knowledge and attitudes as part of the Adolescents Caring for Community by Promoting Literacy on Insurance, Stroke, Health Education, Emergencies, and Dementia (ACComPLISHED, see Paul Lewis below)

10/2023-present **Bluye DeMessie, MD/PhD Candidate, Albert Einstein College of Medicine Neuroscience Department**
I have served as a thesis advisor (PI Michael Lipton, CUIMC Neuroradiology)

9/2023-present **Steffany Chamut DDS (Instructor in Oral Health Policy and Epidemiology Institution, Harvard School of Dental Medicine)**
Providing mentorship on Dr. Chamut's K01 application exploring the crossroads of oral health and cognitive impairment.

9/2023-present **Paul Lewis (medical student, VP&S)**
Mentoring Paul on development and implementation of ACComPLISHED, a community health worker program for high school students, with initial program in Winter 2024, and in Fall 2024 entered its 3rd iteration, numbering > 700 trainees.

8/2023-present **Sarah Frances (Mailman MPH Candidate)**
Mentoring Sarah on several projects aimed at exploring social determinants of health involving concussion care.

8/2022-6/2024 **Ndubisi Mark Chikwem MD (as a Behavioral Neurology Fellow)**
Provided mentorship to Mark whose master's thesis involves exploring risk of incident dementia among those with epilepsy, as well as the reverse relationship, using the National Alzheimer's Coordinating Center database. Dr. Chikwem is now Assistant Professor of Neurology at CUIMC.

6/2023-8/2023 **Robyn McDaniel (Meharry MPH Candidate)**
Co-mentored Robyn (with Dr. Jennifer Manly) as a visiting scholar from Meharry Medical College. Robyn's abstract "Investigating the Impact of Oral Hygiene Behaviors and Subjective Oral Health on Cognitive Aging and Well-being in Diverse Aging Populations" was accepted as a poster presentation for

the Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS), November 2023

4/2022-5/2024 **Melissa Mendelson (as PhD Candidate, Columbia University)**
Advised Melissa as subject matter expert on dementia as well as how families may access needs and support information by the internet. Dr. Mendelson successfully defended her thesis.

2/2022-present **Maryam Zolnoori, PhD, as post-doctoral trainee and Assistant Professor**
Provided mentorship on several projects led by Maryam leading to her K99/R00 phase. She is developing an impressive trajectory focusing on natural language processing in identifying persons with Alzheimer's disease and related dementias.

5/2022-8/2022 **Johnathan Bailey (medical student, VP&S)**
Mentored Johnathan on a study of natural language processing

5/2022-8/2023 **Paul Kim (student, Columbia University post-bac program)**
Mentoring Paul on a project developing a Korean-language version of Old School Hip Hop

5/2022-present **Mark Gettas (student, Columbia College of Dental Medicine)**
Mentoring Mark on a project exploring objective evidence versus subjective perceptions of periodontal disease

6/2021-present **Arielle Lehman MD (as neurology resident)**
Mentoring Arielle on several projects involving sports-related concussion

1/2021-5/2024 **Ari Margolies (as Teacher's College Master's student)**
Mentoring Ari on a project exploring COVID-associated impacts on collegiate athlete experiences, including premature retirement

1/2020-7/2021 **Janhavi Malliah EdD (as Teacher's College doctoral student)**
Janhavi developed a simplified stroke knowledge assessment tool for use among minority community health workers including the Columbia InTOuCH program. She is the senior program coordinator for InTOuCH and related programs.

8/2020-9/2021 **Anna Nordvig MD (as Aging and Dementia Fellow at CUIMC)**
Anna successfully competed for an ADRC Development award, and will be studying the impact of COVID on neurodegenerative plasma biomarkers. Dr. Nordvig is Assistant Professor of Neurology at NYP-Cornell, and focuses on dementia and post-COVID syndrome.

6/2020-6/2024 **Angela Ward, RDH, EdD**
Dr. Ward Assistant Professor of Hygiene Sciences (in Dental Medicine) at CUMC and was an inaugural ADRC REC scholar, 2020-23. Her capstone project anticipates submission to a journal soon. She retired from the University in 2024.

6/2020-5/2021 **Amro Harb (as 1st year medical student, VP&S) 2020 BRAIN T35 trainee**
Amro researched risk factors for adverse outcomes in persons aged 65y and over presenting with COVID-19 to CUIMC 4/2020-5/2020. A manuscript was published in *JAD* May 2021. Co-mentored with Karthik Natarajan.

6/2019-2022 **Lucy Colville MD (as 1st year medical student, P&S), 2019 BRAIN T35 trainee**
Lucy has assessed knowledge, attitudes and behaviors around advance care planning in the Columbia InTOuCH community health worker program and is developing a related workshop likely to be implemented in Fall 2019. An abstract was submitted in 12/2019 for consideration at the 2020 annual meeting of the American Geriatrics Society. She began residency in pediatrics in 2022 at the University of Washington.

6/2019-2022 **Jalen Dansby MD (as 1st year medical student, P&S) 2019 BRAIN T35 trainee**
Jalen was the first to explore a registry of more than 400 concussion patients presenting to the sports medicine practice 2017-present, exploring for patterns of care use. Jalen was co-mentored by Dr. Thomas Bottiglieri of sports medicine. Jalen began orthopedics residency at Cedars Sinai Medical Center in 2022.

6/2019-2022 **Alice Daramola, MPH (as 1st year medical student, P&S), 2019 BRAIN T35 trainee**
In a follow-up study to Eric Morris (see below), Alice used the New York SPARCS dataset to explore emergency care use patterns across the lifespan for concussion relative to socioeconomic indicators including race-ethnicity, income, and insurance status, as well as by New York geographic region. A manuscript is in preparation. Alice was co-mentored by Dr. Amelia Boehme.

12/2018-6/2019 **Eric Morris (as 2nd year MPH student, Columbia)**
For his MPH project/thesis, Eric used the New York SPARCS dataset to explore emergency care use patterns among adolescents presenting with concussion including sports-related concussion, relative to socioeconomic indicators including race-ethnicity, income, and insurance status, as well as by New York geographic region. A manuscript is in preparation. Eric was co-mentored by Dr. Amelia Boehme. He is now based in San Francisco, working as a Healthcare Analyst at Analysis Group.

11/2018-present **Nathan D'Cunha (PhD Student, University of Canberra)**
Nathan is interested in demonstrating physiological biomarkers of neuropsychiatric symptoms of dementia in both patients and their caregivers, and the potential impact of community based arts programs in altering their trajectory. In 2019, Nathan applied for National Health and Medical Research Council Ideas Grant (Federal, Australia) as well as Fulbright scholarship to work directly with me in NYC for a year. Both are being prepared for resubmission.

7/2017-present **Thomas Bottiglieri, DO**
Dr. Bottiglieri is an Assistant Professor of Orthopedics at CUIMC and Founding Director of their non-operative sports medicine program. I have mentored him since his arrival at Columbia following a career in private practice. We have written several manuscripts together and I have served as an advisor as he has passed through several early stage career transitions.

6/2018-1/2019 **Kyri LePree (as senior in high school)**
Kyri worked on our Hip Hop Public Health programs, including specifically exploring socioeconomic determinants of baseline stroke knowledge in parents in our Hip Hop Stroke RCT program. Kryi enrolled into Columbia University on a neuroscience track in Fall 2019.

6/2018-2021 **Alexandra Marcy MD (as 1st year medical student, NYMC), 2018 BRAIN T35 trainee**
Alexandra is working on with our group's Columbia Institute for Training, Outreach, and Community Health (InTOuCH) program to assess the impact of training on our community health worker (CHW) participants. She is also exploring for barriers to ongoing training and maintenance of certification for CHW trainees in signing community members into the Affordable Care Act insurance programs. She graduated medical school in 2021 and is currently a primary care resident.

6/2017-5/2020 **Mark Cort MD (as 1st year medical student, NYU), 2017 BRAIN T35 trainee**
Mark worked on the TASHE program baseline data, exploring socioeconomic determinants of perceived stroke risk among a cohort of adults enrolled into a stroke education program. He presented an abstract as a poster presentation at the AAN 2018 annual meeting. Mark is pursuing a neurology residency and training began in 2020 at UPenn.

7/2016-6/2017 **Minji Kim MD (as PGY4 Neurology Resident)**
Drawing upon Minji's research background in fMRI, she assisted with implementation of the Taub Research Pilot MRI study of collegiate athletes. Dr. Kim is a neurologist practicing in Washington State.

4/2016-3/2017 **David Baker MD (as 4th year medical student, P&S)**
For his longitudinal scholarly project, mentored David in an exploration of the secular trends in concussion diagnosis in NY State and worked to develop a post-concussion retirement algorithm. He had 2 publications (*AJSM* November 2017 and *Neurology: Clinical Practice February* 2018). David pursued a career in pediatrics (Pediatrics resident 2017-2020, pediatric critical care fellow 2020-present, Montefiore medical center).

3/2016-5/2019 **Cecilia Davis-Hayes MD (as 4th year P&S medical student, P&S)**
Cecilia has dedicated two years to several TBI research projects including MRI in active football players and the epidemiology of concussions including gender differences of Columbia athletes. Several publications and presentations as above, including *JAAOS* and *Neurology: Clinical Practice*. Cecilia is pursuing a career in radiology; she subsequently completed an internship 2019-2020 (Englewood Hospital NJ), and is currently a resident in neurology at NYU (2020-present).

12/2015-5/2016 **Colin Klenk MD (as 4th year P&S medical student, P&S)**
For his longitudinal scholarly project, Colin helped develop a curriculum for the planned Hip Hop Volunteer Project, which aims to implement a large-scale elementary health education program in NYC schools using undergraduate and graduate students from Columbia University with an interest in public health. Colin began residency training in neurology at Yale University in 2016 and subsequently completed vascular neurology fellowship also at Yale in 2020. Since then he has been a staff neurologist at Stamford Hospital, also in CT.

05/2015-8/2015 **Jeremy Mitnick (as college junior, University of Michigan)**
Jeremy worked as a summer research observer, assisting with developing a new cohort of former Columbia collegiate athletes having automated neuropsychological testing pre and post-concussion. In 2018 he began medical school at Temple University.

05/2014-04/2015 **Elaine Su MD (as 4th year P&S medical student, P&S)**
For her longitudinal scholarly project, I mentored Elaine in a study exploring the use of retinal optical coherence tomography (OCT) as a tool to identify neurodegenerative illness in a multidisciplinary practice. Elaine pursued training in adult neurology at Stanford beginning in 2015, and began her clinical neuroimmunology fellowship there in 2019. Elaine is now an assistant clinical professor of neurology at UCLA.

02/2014-12/2014 **Daniel Arteaga MD (as 1st year P&S medical student), 2014 BRAIN T35 trainee**
During summer 2014, I mentored Daniel in developing a standardized mortality ratio study entitled “Neurodegenerative Mortality Among a Cohort of Former College Football Players.” Initial analyses have been included in an R01

application (PI Noble) seeking to develop a nationwide mortality study in collegiate sports including football. After completing his MD and MBA at Columbia, in 2019 Dan completed internal medicine residency at UT Southwestern and began a geriatrics and palliative care fellowship in 2022 at NYU.

02/2014-2/2015 **Cailey Simmons MD (as 1st year medical student at SUNY-Albany)**
During summer 2014, I mentored Cailey in studying the longitudinal Hip Hop Stroke experience from 2005-2014, exploring secular trends in knowledge as well as the influence of environment, neighborhood, and school quality. The work has led to presentations at the 2015 International Stroke Conference and a publication in the *Journal of Stroke and Cerebrovascular Diseases*. She completed her residency in Emergency Medicine at Mount Sinai Medical Center in New York City (2017-2021) and is now practicing at Kaiser Permanente Vallejo Medical Center in CA.

02/2012-05/2013 **Wei-Jen Hsieh MD (as a 4th year P&S medical student, P&S)**
As part of her longitudinal scholarly project, I mentored Wei Jen in her development of an integrated math/health curriculum as part of our larger interdisciplinary health project "Hip Hop HEALS (Healthy Eating and Living in Schools)." This project led to funding of an ongoing study (R01 NR017571, PI Williams) "Effect of an Integrated Nutrition-Math Curriculum to Improve Food-Purchasing Behavior of Children. Wei-Jen pursued has a career in pediatrics, beginning with residency training in 2013. She is now in private practice in Washington State.

02/2013-5/2016 **Hannah Roberts MD (as 1st year P&S medical student), 2013 BRAIN T35 trainee**
During summer 2013, I mentored Hannah to complete 2 projects relating art-centered experiences and Alzheimer care: 1) caregiver/patient participant perspective and 2) medical students perceptions of dementia before and after the program. Both studies were presented at the 2014 AAN meeting. Study #1 was supported by T35 AG044303; study #2 was supported by the P&S Steven Miller Memorial Fellowship and was later published in *Neurology*. Hannah pursued a career in radiation oncology, with training beginning in 2017 at Dana Farber (Boston, MA). She is presently an Instructor in Radiation Oncology at MGH.

06/2012-05/2013 **Luke White, MD (as PGY3-4 Psychiatry Resident)**
Explored medical student perceptions of Alzheimer disease and chronic illness as it affects the family unit. Lessons, co-taught by Drs. Noble and White to all P&S students on the neurology clerkship, included early versions of a film in development by Luke's brother (Banker White), released in 2013 as *The Genius of Marian*. The film has since been shown in international film festivals and as a

2014 episode of "POV" on PBS. POV can be seen by over 97% of the American viewing public, with a cumulative audience average of 2.5 million per program. Luke is now an Attending Psychiatrist at Janian Medical Group.

03/2012-06/2014 **Marco Gonzalez-Castellon, MD (as PGY4-6 Resident/Neurovascular Fellow)**
Co-investigator on Assessing efficiency of learning the neurologic exam with a visual tracking device (PI: Noble). Presented as platform at AAN annual meeting, March 2013. After completing a vascular neurology fellowship at CUMC, in 2015 he became Assistant Professor in the Department of Neurological Sciences at the University of Nebraska Medical Center and is the director of their stroke center.

03/2012-06/2014 **Christina Blum, MD (as PGY3-4 Resident)**
Co-investigator on Assessing efficiency of learning the neurologic exam with a visual tracking device (PI: Noble). She is currently the Director of Stroke Services, Penn Presbyterian Medical Center and Assistant Professor of Clinical Neurology at the University of Pennsylvania.

01/2012-05/2013 **Tanzid Shams, MD (as PGY-6 Pediatric Neurology Fellow)**
Co-investigator on "Concussion in Columbia Undergraduate Football Players (2000 -2011)" (PI: Noble). Awarded best poster at Department of Neurology Resident Research Day 2012; paper was presented at ANA 2013. Manuscript is in development. Since 2015 he has been the director of the Neurology Division of the Johnson City Medical Center in Johnson City, TN (Ballad Health). He is now Associate Professor of Neurology at East Tennessee State University, James H. Quillen College of Medicine.

06/2011-05/2012 **Ben Tolchin, MD (as PGY3 neurology resident)**
Developed literature review regarding history of child-mediated health communication and co-authored a manuscript with me. He is currently Assistant Professor of Neurology at Yale University.

07/2009-2016 Faculty Advisor for P&S Chapter of American Academy of Neurology's Student Interest Group in Neurology (SIGN). Coordinate with chapter's rotating presidents.

Educational Administration and Leadership

		# of annual learners
02/2010-Present	**Hip Hop Public Health, Department of Neurology** Co-Director of Research	6,000
07/2009-12/2016	**Columbia University College of Physicians & Surgeons** Neurology Clerkship Director	150-175

Instructional/Educational Materials used in Print or other Media

1/2015-2016	**Scientific American Neurology** Neurology Clerkship Co-Director Published online 10/2015

Community Education

02/2017-present	Hip Hop Heads UP Concussion education program *Creator*
01/2012-present	Old SCHOOL (Seniors Can Have Optimal aging and Ongoing Longevity) Hip Hop A novel child-mediated health communication program *Creator*
01/2010-12/2016	Neurology clerkship: New curricula including OSCE *Creator*
2006-present	Hip Hop Stroke A novel child-mediated health communication program *Co-Creator*

Patents & Inventions:

***Noble JM**, Morrison B, Schevon C, Kymissis I. Systems and methods for real-time concussion diagnosis by electroencephalogram activity monitoring. US Patent No. 11759147, published 9/19/2023

Publications

ORCID: 0000-0003-0648-6702
Google Scholar Statistics: *Citations: 8608, h-index: 39*, *i10-index: 83*, m-index: 2.3 (ref yr-2008)

Peer-Reviewed Research Publications in Print or other Media
**indicates first, senior, and/or corresponding author*

Pending:

1. *Davis-Hayes C, Desai N, Laffey J, Gossett JD, Grubb ER, Levine WN, Hesdorffer DC, **Noble JM**. Increased Risk of Musculoskeletal injury in Collegiate Athletes after Pre-collegiate Concussion (in development)

2. ***Noble JM**, Halpin-Healy C. The catalytic effects of the COVID-19 pandemic on dementia care delivery models: turning theory into practice overnight (in revision, *Current Neurology and Neuroscience Reports)*

3. ***Noble JM**, Minchala S, Hassankhani M, Harris A, Lloyd A, Sawyer V, Williams O. Messaging matters: An elementary school aged Old SCHOOL trial participant and their perceptions of aducanumab during its first week of approval (in development)

Published/In Press:

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126. ***Noble JM**, Scarmeas N. "Cognitive impairment." *Improving Oral Health for the Elderly: An Interdisciplinary Approach*. Eds. Ira B. Lamster, DDS, MMSc, and Mary E. Northridge, PhD, MPH. Springer US Books 2008.

127. Luchsinger JA, **Noble JM**, Scarmeas N. Diet and Alzheimer's Disease. *Curr Neurol Neurosci Rep*. 2007 Sep;7(5):366-372. PMID: 17764625

Books/Textbooks for Medical or Scientific Community

128. Merritt's Neurology Review. Co-editor (Eds. Rosenberg, Bauerschmidt, **Noble,** Mayer, Louis), Wolters Kluwer (2025).

129. Merritt's Neurology 14th Edition. Co-Editor (eds. Louis, Mayer, & **Noble**), Wolters Kluwer, (2021).

130. Merritt's Neurology 14th Edition. Section Editor, "Diagnostic Tests" (eds. Louis, Mayer, & **Noble**), Wolters Kluwer, (2021).

131. Merritt's Neurology 14th Edition. Section Editor, "Neurological History and Exam" (eds. Louis, Mayer, & **Noble**), Wolters Kluwer, (2021).

132. Gulf War and Health: Volume 10: Update of Health Effects of Serving in the Gulf War, 2016 (2016), Deborah Cory-Slechta and Roberta Wedge, Editors. Committee member. PMID: 27054224

133. Merritt's Neurology 13th Edition. Section Editor, "Diagnostic Tests" Wolters Kluwer, 2015.

Books/Textbooks for General Public

134. "Navigating Life with Dementia" (Oxford University Press/American Academy of Neurology), Author. Published 6/15/2022

Case Reports:

135. Anderson FL, Hellwinkel JE, Montjoy M, Levi M, Tu Bin, **Noble JM**, Ahmad CS, Bottigleiri TS. Change in Heart Rate Variability after Concussion in a Collegiate Soccer Player. *Neurotrauma Rep.* 2020 Sep 29;1(1):88-92. PMID: 34223534

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137. *Etienne M, **Noble JM**. Multiple parenchymal tuberculomas without tuberculous meningitis. *Arch Neurol*. 2007;64:1045-1047. PMID: 17620499

138. ***Noble JM**, Mandel A, Patterson MC. Scurvy and Rickets Masked by Chronic Neurologic Illness: Revisiting "Psychologic Malnutrition." *Pediatrics*. 2007 March;119(3):e783-90. PMID: 17332193

139. Sommerville RB, **Noble JM**, Vonsattel JP, DeLaPaz R, Wright CB. Eosinophilic Vasculitis in an Isolated CNS Distribution. *J Neurol Neurosurg Psychiatry*.2007;78:85-88. PMID: 21686608

140. ***Noble JM**, Anderson CT, Etienne M, Williams O, Adams DJ. Sarcoid meningitis with fulminant delirium and markedly abnormal cerebrospinal fluid. *Arch Neurol* 2007 Jan;64(1):129-31. PMID: 17210821

141. ***Noble JM**, Canoll P, Honig LS. Brain Tumor-Associated Dementia. *Sci. Aging Knowl. Environ.* 2005 Aug 24; 2005(34):dn2. PMID: 16120848

Letters to the Editor

142. *Dhamoon M, **Noble JM**. [Correspondence to] Intranasal insulin improves cognition and modulates beta-amyloid in early AD. *Neurology*. 2009 Jan 20;72(3):292-294. PMID: 19153380

143. ***Noble JM**, Hauser WA. [Correspondence to] Effects of rivastigmine on cognitive function in patients with traumatic brain injury. Neurology 2007 May 15;68(20):1749. PMID: 17502565

Thesis

144. "Possible association of periodontitis with cognitive impairment among older adults: analysis of the Third National Health and Nutrition Examination Survey (NHANES-III)." For Master's of Epidemiology, Mailman School of Public Health, graduated 5/2008.

Other Non-Peer Reviewed Publications in Print or Other Media

Published Abstracts

145. ***Noble JM**, Neelesh N, Martinez D, Temprosa M, Bowers A, Doherty L, Febres GJ, Sanchez D, Goldberg TE, Sherif H, Luchsinger JA, and Diabetes Prevention Program Research Group. Implementation of a standardized Video-based Asynchronous Neurological Examination (VANE) in a multi-center study of AD/ADRD: Findings from The Diabetes Prevention Program Outcomes Study (DPPOS) AD/ADRD Project. Alzheimer's Association International Conference (AAIC) 7/29/2024 Poster #86250

146. *L Doherty, JA Luchsinger, M Temprosa, NK Nadkarni Goldbert TE, Sherif H, Bowers A, Martinez D, Febres GJ, Sanchez D, **Noble JM**. Integrating NACC UDSv3 into non AD/ADRD Cohorts: The Diabetes Prevention Program Outcomes Study in Alzheimer's Diseases and Related Dementias (DPPOS)-AD/ADRD Project Experience, Alzheimer's Association International Conference, #687 on 7/30/2024

147. ***Noble JM**, Minchala SG, Hedmann MG, Teresi J, Ocepek-Welikson K, Silver SA, Eimicke JP, Ramirez M, Harris A, Lloyd A, Chhea K, Alvarez-Arango C, Lee Y, Sawyer V, Williams O. Development of the 7-item ASK-AD Assess Symptoms and Knowledge of Alzheimer's Disease tool for multigenerational community dementia awareness: Findings from Old SCHOOL Hip Hop. Alzheimer's Association International Conference (AAIC) 7/29/2024 Poster #89722

148. Houlihan HM, Johnson AS, Smith AC, Guzmán DS, Okafor A, Heuer LB, Talmasov D, Chikwem N, Dass DS, **Noble JM**, Kreisl WC, Small SA, Lao PJ, Microglia density measured by TSPO PET across amyloid positivity and clinical variants. Alzheimer's Association International Conference (AAIC) 7/29/2024 Poster #95057

149. Biber SA, Prado MG, Culhane JE, Phuong J, Keller B, Lerch M, Wang S, **Noble JM**, Moulder KL, Saykin AJ, Gao S, Lai A, Natarajan K, Kukull WA, Mooney S, Stephens K. Advancing Alzheimer's disease and related dementias (ADRD) and COVID-19 research by linking real-world data with a standardized longitudinal ADRD data platform. Alzheimer's Association International Conference (AAIC) 7/31/2024 Poster #94785

150. Honig LS, Kim JM, Gonzalez WP, DiMuro V, Jagannathan R, Marder K, **Noble JM**, Bell KL, Mayeux R. Clinical Use of Lecanemab at an Academic Medical Center. Alzheimer's Association International Conference (AAIC) 7/31/2024 Developing Topic #95181

151. Dass D, Chikwem N, Jagannathan R, **Noble JM**, Bell M, Marder K, & Ghoshal S. (2024, April). Work-up and Counseling for First Evaluation of Cognitive Decline: A Simulation-based Educational Tool and Embedded Learning Results (P8-7.001). In *Neurology* (Vol. 102, No. 17_supplement_1, p. 6444).

152. Hofmann A, Haesler LM, Preische O., Gräber-Sultan S, Obermüller U, Vöglein J, Levin J, Laske C, Fitzpatrick CD, Levin R, Joseph-Mathurin N, Chen CD, Cruchaga C, Goate A, Allegri

RF, Benzinger TLS, Berman S, Chui HC, Fagan AM, Farlow MR, Fox NC, Day GS, Hassenstab JJ, Jack CR, Lee JH, Levey AI, Martins RN, Mori H, **Noble JM**, Perrin RJ, Sperling RA, Rosa-Neto P, Salloway S, Sanchez-Valle R, Schofield PR, Xiong C, Karch CM, Graff-Radford NR, Gordon BA, Morris JC, McDade E, Bateman RJ, Chhatwal JP, Jucker M and Schultz SA (2023), Refinement of Neurofilament light Dynamics in CSF and Blood for familial Alzheimer's Disease. Alzheimer's Dement., 19: e078802. https://doi.org/10.1002/alz.078802

153. Nordvig AS, Purpura L ,Xi K, Strobino K, **Noble JM**, deLeon MJ. Neurodegeneration blood markers in largely Hispanic and non-Hispanic Black COVID-19 patients: from acute hospitalization to long-term PASC with/without brain fog. Abstract #69220, Alzheimer's Association International Conference 2022.

154. Honig LS, Sun Y, Irizarry MC, Swanson CJ, Dhadda S, Charil A, Hart D, **Noble JM**, Huey ED, Teich AF. Neuropathological Autopsy Findings in an Individual with Alzheimer's Disease who Received Long-Term Treatment with Lecanemab (BAN2401). Abstract #69220, Alzheimer's Association International Conference 2022.

155. Schultz SA, Liu L, Ostaszewski B, Fitzpatrick CD, Xiong C, Fagan AM, **Noble JM**, Rosa-Neto P, Farlow MR, Schofield PW, Morris JC. Plasma levels of an N-terminal tau fragment predict core AD and neurodegenerative biomarkers in autosomal dominant Alzheimer's disease: Findings from DIAN. Abstract #69285. Alzheimer's Association International Conference 2022 Aug 2.

156. Siddiqui, A., Taing, L., Plick, N., Garrie, A., **Noble, J**., Halpin-Healy, C., & Fernandez, H. (2021, April). Measuring How an Arts-Based Educational Program Impacts Medical Students' Perceptions of People with Dementia. Journal of the American Geriatrics Society 2021 (69): S277-S278.

157. Cort M, **Noble JM**, Eimicke JP, Teresi J, Williams O. Identifying predictors of stroke preparedness among a high risk church-going urban population: Findings from The Tailored Approaches to Stroke Health Education (TASHE) trial. *Neurology* April 10, 2018; 90 (15 Supplement). P1.120.

158. *Davis-Hayes C, Gossett J, Levine W, Shams T, Harada J, Mitnick J, **Noble J.** Gender Specific Outcomes and Predictors of Concussion Recovery: A Single Site 15- year Ivy League Experience. *Neurology* April 18, 2017 vol. 88 no. 16 Supplement P4.325; 1526-632X

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160. *Baker D, Kulick E, Boehme A, **Noble J**. Effects of the New York State Lystedt Law on Concussion-Related Emergency Healthcare Visits among Adolescents, 2005–2014 (P6.145). *Neurology* April 18, 2017, 88:16 Supplement P6.145; 1526-632X

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164. *Roberts HJ, **Noble JM**. Changing Medical Student Perceptions of Dementia: An Arts-Centered Experience. *Neurology* April 8, 2014 vol. 82 no. 10 Supplement P1.318

165. *Roberts HJ, Halpin-Healy C, McGinniss R, **Noble JM**. Museum-based creative arts programming is associated with less dementia patient apathy and better caregiver well-being. *Neurology* April 8, 2014 vol. 82 no. 10 Supplement P1.002

166. *Shams T, Brickman AM, Gossett J, Levine W, **Noble JM**. Subtle Post-Concussion Cognitive Impairment Is Under-Recognized, and yet Identifiable: Findings from the Concussion in Columbia University Sports Student (ConCUSS) Study [ABSTRACT] *Ann Neurol* Dec 2013: 74(S17); page S37.

167. Wright B, Lewis L, **Noble J**, Vonsattel JP, Khandji A, Sommerville R, Wright C. Case Series: Eosinophilic Vasculitis Isolated to the Central Nervous System (P02.053) *Neurology* February 14, 2013 80: P02.053

168. *Gonzalez-Castellon M, Phillips M, Blum C, Goldberg M, **Noble JM**. Assessing the Efficiency of Learning the Neurologic Exam with a Visual Tracking Device (S27.007). *Neurology* February 14, 2013 80:S27.007

169. ***Noble J**, Kang M-S, Honig L. Arteriosclerosis and Alzheimer's disease: A case-control pathologic study. *Alzheimer's & Dementia* 2012, 8(4), P298

170. Collins-Praino L, Scarmeas N, Manly J, Schupf N, **Noble J**, Provenzano F, Griffith E, DeCarli C, Mayeux R, Luchsinger J, Brickman A. White Matter Hyperintensities May Mediate the Relationship Between Inflammation and Cognition in an Elderly Cohort. *Alzheimer's & Dementia* 2012, 8(4), P523

171. *Williams O, DeSorbo A, **Noble J**. Hip Hop Stroke: Long-Term Retention of Stroke Knowledge Among Sixth Graders Living in a Low-Income Neighborhood. *Stroke* 2012 43: A2476

172. *Williams O, DeSorbo A, **Noble J**. Hip Hop Stroke: The Standalone Effect of Musical Cartoons on Stroke Knowledge of Fourth Grade Children Living in a Low-Income Neighborhood. *Stroke* 2012 43: A2476

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175. *Williams O, DeSorbo A, **Noble J**M. Lifetime Acquired Stroke Knowledge in a High Risk Community: Parents Versus Children. *Annals of Neurology*, 2010, 68 (S14), p S11

176. ***Noble J**, Schupf N, Luchsinger J. Relation of high sensitivity C-reactive protein with plasma amyloid beta. *Neurology* 2009; 72 Suppl 3: A53

177. ***Noble JM**, Manly JJ, Schupf N, Tang MX, Mayeux R, Luchsinger JA. "Relation of C-reactive protein to cognitive impairment." *Alzheimer's & Dementia: The Journal of the Alzheimer's* Association 2009; 5(4S): P297

178. Luchsinger JA, **Noble JM**, Tang MX, Mayeux R. "Hyperinsulinemia, defined as low adiponectin or type 2 diabetes in the elderly, is related with higher late-onset Alzheimer's disease risk" *Alzheimer's & Dementia: The Journal of the Alzheimer's Association* 2009; 5(4S): P386

179. ***Noble J**, Borrell LN, Papapanou PN, Elkind M, Scarmeas N, Wright C. Association of the Periodontitis Pathogen *Porphyromonas gingivalis* with Poor Memory: Analysis of the Third National Health and Nutrition Examination Survey (NHANES-III). *Neurology* 2008; 70 Suppl 1: A191.

180. Williams O, Wowo B, **Noble J**, Brust J. Insurance Coverage And Ambulance Use During Acute Stroke In A Low Income Inner City Population. *Stroke* 2008; 39:627.

181. ***Noble JM**, Scarmeas N, Honig L. Challenges in dementia diagnosis in a multiethnic population. *Neurology* 2007; 68 Suppl 1:A237

182. ***Noble JM**, Manly JJ, Schupf N, Mayeux R, Luchsinger JA. Possible disparate contribution of diabetes to cognitive impairment in elderly minorities. *Neuroepidemiology* 2007; 28:125.

183. *Williams O, **Noble JM**. "Hip-Hop" Stroke Education in Central Harlem Elementary Schools: Pilot Data from a Novel Intervention and Proposed Educational Model for Stroke Awareness Developed by the National Stroke Association. *Stroke* 2007.38:457-8.

184. Williams O, **Noble JM**, Brust JCM. Stroke Associated with Cocaine Abuse: No Longer Just a Problem of the Young. *Neurology.* March 2006; 66 (Suppl 2): A384.

185. Williams O, **Noble JM**, Brust JCM. Recombinant Tissue Plasminogen Activator (rtPA) for Acute Ischemic Stroke among African Americans in Central Harlem. *Annals of Neurology*, 2005, 58 (S9), p S45

Invited and/or Peer-Selected Presentations at Regional, National or International Levels:

International

6/28/2018	**7th International Human Microbiome Congress 2018** Killarney, Ireland Cross-sectional associations between human oral microbiome next generation sequencing and cognitive impairment in a multi-ethnic elderly population. **Noble JM**, Sandra S, Cheng B, Chen Y, Shariff JA, Celenti R, Watson CWM, Papapanou PN
11/10/2016	**United Nations, NGO Committee on Mental Health** New York, NY Comprehensive Healthcare: Integration of Physical and Mental Healthcare for the Prevention and Control of NCDs Across the Lifespan
3/13/2015	**International Association for Dental Research General Session,** Boston, MA Papapanou PN, Burkett S, Watson C, **Noble JM**. Oral Health Status among Elderly Participants in the WHICAP Study. (Presented by PNP)
3/15/2013	**Alzheimer's Association International Conference**, Boston MA "Public Health and Psychosocial: Education, Training and Technological Applications" Session ***Noble JM**, Hedmann MG, Williams O. Teaching Children about Dementia: Pilot Findings from the Hip Hop Old S.C.H.O.O.L. (Seniors Can Have Optimal aging and Ongoing Longevity) Program. (Presented by JMN)

2/7/2007 **International Stroke Conference,** San Francisco, CA
"Prevention Strategies" Session
*Williams O, Noble JM. "Hip-Hop" Stroke Education in Central Harlem Elementary Schools: Pilot Data from a Novel Intervention and Proposed Educational Model for Stroke Awareness Developed by the National Stroke Association (presented by OW)

National

11/19/2024 **EDC/National Dementia Care Collaborative**
2024 Autumn Summit: Strategies for Implementing Dementia Care: Resources for CMS GUIDE Participants & Other Dementia
Presentation: Session 5: "Addressing Health Equity when Implementing Comprehensive Dementia Care"

6/13/2023 **NIA Oral Health and Alzheimer's Disease and related dementias Virtual Workshop**
Keynote speaker

9/9/2022 **Focus on Aging / Federal Partners' Webinar**
COVID-19 & Dementia: Translating findings from the initial NYC wave into longitudinal studies of cognitive aging

7/26/2022 **Big 10-Ivy League TBI Research Collaboration**
2 slides 2 minutes 2 questions: Premature Retirement Revisited: The Impact of COVID-19 on Sports Participation Among the B10 and Ivy League Athletes

10/6/2021 **National Institute on Aging Workshop: Is there a causative role for infectious agents in Alzheimer's Disease?**
"Periodontal disease and cognitive aging in a multiethnic cohort: Findings from the Washington Heights-Inwood Columbia Aging Project (WHICAP) Ancillary Study of Oral Health"

7/21/2021 **Big 10-Ivy League TBI Research Collaboration**
Keynote panel: Psychological Burden of Retirement in Athletes

4/15/2021	**Alzheimer's Association** COVID-19 & Dementia: A Webinar Series for Healthcare Professionals: Challenges and Practical Approaches to Dementia Care during COVID-19
7/17/2019	**Big 10-Ivy League TBI Research Collaboration** 8th annual meeting, Chicago "Presentation Flash: NoMo Diagnostics"
7/18/2018	**Big 10-Ivy League TBI Research Collaboration** 7th annual meeting, Philadelphia "Medical Retirement from Sport After Concussion"
11/30/2017	**Understanding the Role of the Microbiome in Aging and Age-Related Disorders—Implications for Disease Treatment and Prevention** **National Institutes of Health** Rockville, MD Invited Presentation: "Role of Microbiome in AD: Signals from Periodontal Research"
6/8-9/2016	**The Art of Examination: Art Museum and Medical School Partnerships** Museum of Modern Art, NY Presentation: "Research & Evaluation" and Panelist: "Counting What Counts: Research and Evaluation in Arts-based Medical Education"
2/10/2016	**Gulf War and Health Volume 10 Related Briefings (Capitol Hill, Washington DC)** Testimony given at: US Veterans Affairs Administration US Senate Veterans Affairs Committee US House of Representatives Veterans Affairs Committee
10/16/2015	**American Academy of Neurology** Fall Meeting, Las Vegas, NV "Neurology Update: Dementia"
07/15-16/2015	**Big 10/CIC Ivy League TBI Research Collaboration** 4th annual meeting, Chicago

	"Breakfast by Position: Athletics" and "Connecting the Dots: Report from the funding working group"
4/18/2015	**American Academy of Neurology** Annual Meeting Washington DC Clerkship Director & Program Director Session: Critical Thinking and Professionalism "Thinking about Finches, Firetrucks, and Ways to Develop Clinical Reasoning Skills"
7/17/2014	**Big 10/CIC Ivy League TBI Research Collaboration** 3rd annual meeting, Philadelphia "Active and Reconstructed Player Cohorts to Address Concussion Research Questions: Lessons from the Concussion in Columbia University Sports Students (ConCUSS) Studies"
3/2014	**AFTD's 2014 Education Conference and Annual Meeting**—White Plains NY -small group session for caregivers
3/20/2013	**American Academy of Neurology Annual Meeting,** San Diego CA S27.007, part of S27: Neurologic Education. *Gonzalez-Castellon M, Phillips M, Blum C, Goldberg M, Noble JM. Assessing the Efficiency of Learning the Neurologic Exam with a Visual Tracking Device Presented (by MGC)
5/4/2007	**World Federation of Neurology North American Regional Meeting Conference**, Boston, MA *Noble JM, Manly JJ, Schupf N, Mayeux R, Luchsinger JA. Possible disparate contribution of diabetes to cognitive impairment in elderly minorities. (presented by JMN)
4/6/2006	American Academy of Neurology Annual Meeting, April 6, 2006 S54.005, part of S54: Uncommon Causes of Stroke Williams O, Noble JM, Brust JCM. Stroke associated with cocaine abuse: no longer just a problem of the young. (Presented by JMN)

Regional

10/23/2024	**Stamford Hospital Department of Medicine Grand Rounds** "Update on Alzheimer's Disease"
2/7/2024	**Columbia University Narrative Medicine Grand Rounds** Conversation with Dr. Sandeep Jauhar, author of "My Father's Brain"
11/3/2023	**Riddle Hospital Department of Medicine Grand Rounds** "Update on Alzheimer's Disease"
3/11/2023	**Demarest Free Public Library** "What's new in dementia?"
11/21/2022	**Caring Kind NYC Annual Research Meeting** "Emerging trends in Alzheimer's disease: A clinician's perspective"
11/16/2022	**Columbia Climate School** Soccer in a Warming World Workshop: "Sports-related concussion and climate: Does 'concussion weirding' follow global weirding?"
9/11/2022	**Gabi Williams Alzheimer's Foundation (Nigeria)** Memorial Lecture: "What's new in dementia?"
3/24/2022	**Bloomingdale Aging in Place (A naturally occurring retirement community in Manhattan)** Virtual presentation: "What's new in dementia?"
3/1/2022	**Fordham University Law School** "Dementia: Definition, prevalence, and treatment of dementia." Virtual conference: Dementia and the Law
5/14/2021	**Lankena Medical Center** Medicine Grand Rounds: "Update on Alzheimer's Disease"
5/10/2021	**Caring Kind NYC Research Update**

	"What's new in Dementia: Biomarkers, treatments, and research opportunities now and coming soon"
9/11/2020	**NYP Health Outreach (virtual)** "Oral Health & Dementia"
3/5/2020	**Columbia University Irving Medical Center** Grand Rounds, Department of Neurosurgery
11/22/2019	**Columbia University Irving Medical Center** Grand Rounds, Department of Neurology
11/21/2019	**Columbia University Irving Medical Center** Columbia CEAD 2nd Annual Health Aging & Cargiver Conference "Alzheimer's Disease and Oral Health: A real connection or just more evidence of getting 'long in the tooth'?" Program was delivered twice (English & Spanish directly by JMN)
3/30/2019	**Princeton University: The Changing Landscape of Concussion** "Epidemiologic Perspectives in Traumatic Brain Injury"
2/26/2019	**Columbia University All Staff Winter Meeting, CU** "Changing the Game"
2/21/2019	**2019 Columbia Engineering in Medicine Research Symposium (at CUIMC)** "NoMo Diagnostics: From Identifying an Unmet Need to Starting a Start-up"
1/12/2019	**Columbia University, College of Dental Medicine** **At the Crossroads: Medicine/Surgery/Dentistry** "Alzheimer's Disease & Periodontal Disease"
3/14/2018	**Fordham University** Symposium: "Brain Trauma and College Athletics"
12/6/2017	**Brooklyn Queens Nursing Home** Brooklyn, NY Caregiver Training Conference "Overview of Dementia"
11/30/2017	**NYU-Langone Medical Center** **NYU Concussion Grand Rounds** New York City

	"Epidemiological Challenges in Concussion and CTE"
11/17/2017	**PriMED NY Conference** Jacob Javits Center, New York City "What's New in Dementia?"
3/22/2017	**Departments of Neurology, Rutgers University** **Neurology Grand Rounds (Newark Campus)** **Artiss Powell Memorial Lecture (New Brunswick Campus)** First (case) and 10 (years later): The long path ahead to better understanding chronic traumatic encephalopathy
3/17/2016	**Department of Neurosurgery (CUMC)** Grand Rounds: First (case) and 10 (years later): The long path ahead to better understanding chronic traumatic encephalopathy
12/1/2015	**University of Florida, Department of Neurology** **Neurology Grand Rounds** "10 years of Hip Hop Stroke: Improving knowledge, behavior, and ultimately access to acute stroke therapies"
11/18/2015	**17th Annual Stein Lecture** **New Jewish Home, Mamaroneck NY** "Art-Centered Experiences And Cognitive Aging"
10/09/2015	**Alzheimer's Association, NYC Chapter** Caregiver Training Conference "Overview of Alzheimer's Disease"
10/7/2015	**HAS Harlem Advocates for Seniors: Discussion of Dementia** Panelist
4/1/2015	**Columbia University** 2015 Mini-Symposium on the Internet of Things Human-Machine and Wearable Systems in Sports Related Concussion:
12/9/2014	**JCC Manhattan** "Concussion: Are Football + Sports Safe for Your Brain?"

10/20/2014	**Mailman School of Public Health** Robert Butler Aging Center Brown Bag Series "Museum-based, arts-centered experiences as a means to improve dementia caregiver burden"
10/10/2014	**Alzheimer's Association, NYC Chapter** Caregiver Training Conference "Overview of Alzheimer's Disease"
9/26/2014	**Woodrow Wilson School of Public and International Affairs, Princeton University** Symposium: Concussions in youth sports as a public health concern "Epidemiological insights and unanswered questions in the continuum of concussion and chronic traumatic encephalopathy (CTE)"
9/10/2014	**Spence High School, New York City** Review of concussion diagnosis and management.
6/23/2014	**Alzheimer's Association Brain Awareness Summit, Harlem State Office Bldg, NYC** Review of AD.
6/7/2014	**St. Barnabas Medical Center**, Short Hills, NJ Geriatric Care Symposium "Update on Alzheimer's Disease Diagnosis, Epidemiology, and Treatment"
4/24/2014	**Department of Orthopaedics, CUMC** Grand Rounds: Review of Sports-Related Concussion
1/27/2014	**Collegiate High School, NYC** Review of concussion care/diagnosis/management.
6/8/2011	**Department of Neurology, CUMC** Grand Rounds: CPC Discussant
11/28/2010	**Greater New York Dental Meeting** New York, NY "Periodontitis: a potential risk for cognitive decline?"

5/6/2010	**Mountainside Hospital** Montclair, NJ Department of Medicine , Grand Rounds "Periodontitis and cognitive impairment: implications of markers of systemic inflammation"
1/2010	**"Community based multidisciplinary interventions to prevent and treat Cognitive Impairment and its Co-morbidities"** **Columbia University Medical Center (CUMC),** ***Noble JM**. "Strategies to Decrease Cerebrovascular Risk in Harlem"
11/20/2009	**Harlem Hospital Center, New York, NY** **3rd Annual Treatment and Prevention of Stroke in Black and Hispanic Populations.** ***Noble JM**. The Relationship between Stroke and Dementia: Is this a Bigger Problem among Blacks and Hispanics?
6/3/2009	**Aging Concerns Unite Us Conference** New York State Association of Area Agencies on Aging Albany, NY *Noble JM and Williams O. Hip-Hop Stroke: Empowering an Inner City Community to Identify and Prevent Stroke in the Elderly.
10/24/2008	**36th Annual Meeting of the New York State Society of Aging** Saratoga Springs NY *Noble JM and Williams O. Hip-Hop Stroke: Stumbling Before Success.

Invited Media

11/24/2024	**SELF Magazine (online)** "7 Signs a Loved One May Be Developing Dementia That a Lot of People Miss"
10/24/2024	**Columbia Spectator (online and in print)** "How the Ivy League is tackling concussions in football"
10/17/2024	**Federal Judiciary Center** "Dementia and the Law" (online training for all members of US federal judiciary)

9/27/2024	**NYP Health Matters (online)** "Can Concussions Lead to Parkinson's Disease?"
5/17/2024	**ALZFORUM (online)** "Gaining a Foothold: Amyloid Immunotherapy in Clinical Practice"
2/7/2024	**NYP Physician Stories (online)** 5 Questions with Dr. Noble: A multidisciplinary approach to neurological care driven by diverse interests
2/1/2024	**ALZFORUM (online)** "Adieu to Aduhelm: Biogen Stops Marketing Antibody"
1/26/2024	**ALZFORUM (online)** "Rising Leqembi Prescriptions Are Straining Clinic Capacity"
1/12/2024	**NYP Health Matters (online)** "What is Chronic Traumatic Encephalopathy?"
12/1/2023	**NYP Health Matters (online)** "How to support someone with Alzheimer's"
8/17/2023	**Neurology Today (online and in print)** "The FDA and CMS Have Pressed the Go Button on Lecanemab What Happens Now?"
8/17/2023	**Specialty Pharmacy Continuum** "CMS Will Cover 80% Of Leqembi Cost; No Trial Entry Needed: A new era in Alzheimer's therapy"
7/27/2023	**Neurology Today (in print and online)** "Tailored Diet Does Not Show Cognitive Benefit, Trial Finds"
7/21/2023	**NYP Health Matters (Podcast)** "How Memory Works with Dr. James Noble"
6/1/2023	**Brain & Life (Online)** "How to Talk to Loved Ones Who Have Dementia"
6/1/2023	**Brain & Life (Magazine)** "Journalist Natalie Morales Spreads the Word About Alzheimer's Disease"

2/17/2023	**NYP Health Matters (online)** "What to know about frontotemporal dementia"
2/16/2023	**Neurology Today** "Acute Infections That Lead to Hospitalization Increase the Risk for Dementia"
2/8/2023	**Columbia Daily Spectator** "Columbia professors' startup changes the game for concussion detection**"**
1/20/2023	**NYP Health Matters** "Concussions in Sports: What to Know about the Signs, Symptoms, and Treatment"
1/9/2023	**CBS New York (TV and online)** "Researchers experimenting with device in helmets measuring brain activity to combat concussions"
11/17/2022	**Neurology Today** "Dementia and Suicide Risk: Early-Onset Patients, New Diagnoses, and Those with Psychiatric Illness Most at Risk"
9/1/2022	**Neurology Today** A Diet of Ultra-Processed Foods Is Associated with Increased Dementia Risk
8/4/2022	**Brain & Life (podcast)** Journalist Greg O'Brien on Chronicling His Life with Alzheimer's
8/4/2022	**Neurology Today** When Patients Have Guns: How to Discuss the Potentially Deadly Combination of Dementia and Firearms
8/3/2022	**Boston Globe (newspaper)** New research suggests intensity of hits in sports, not years played, may be better predictor of devastating brain damage
8/1/2022	**Brain & Life (magazine)** A Dementia Handbook for Patients and Families (interview about the book *Navigating Life with Dementia*)
6/14/2022	**Lucy's Record Shop (podcast)**

Ep 7. Unlocking Memories (interview covering my early career path to present)

12/1/2021 **Brain & Life (magazine)**
"Art Programs Educate and Engage"
(discussing Arts & Minds)

10/21/2021 **Neurology Today**
"Then and Now: 20 Years After Meeting a Senior Neurology Editor, James M. Noble Reflects on Stepping Into His Shoes"
(discussing my career leading to Merritt's Neurology co-editor)

3/31/2021 **Trailblazers with Walter Isaacson (Podcast)**
"Sports Medicine: Pushing Ourselves to the Limit"
(covering NoMo technology)

8/19/2020 **Medscape Medical News (online)**
"More Evidence Links Gum Disease and Dementia Risk"

8/6/2020 **20 Segundos o Mas**
Multiple terrestrial and internet radio interviews conducted in Spanish, including WLCH-FM, WGNK-FM, WYUU-FM, KIQI-AM/KATD-AM, Spanish Public Radio ("Al Mediodia") and Neuva Vida Network ("Al Dia"). Total listenership: 1.6 million

4/29/2019 **JAMA**
Medical News & Perspectives: "The Arts Dispel Medical Students' Qualms About Dementia" (PMID: 31017634)

1/23/2019 **Science Magazine (online)**
"Gum disease–causing bacteria could spur Alzheimer's"

12/2018 **Columbia Magazine**
"New Smart Helmet Could Spot Concussions in Real Time"

10/18/2018 **Fordham Law News**
"Concussion conference tackles effects of brain injury, with NFL football a focus"

9/2018 **Columbia Medicine, 2018 Annual Report**
2018 Research Highlights
"Dementia Drop"

7/2018 **NoMoDx: Academic Venture Exchange**

Online video

7/22/2018 **CUIMC Newsroom**
What Do We Know about Heading and Concussions?

4/2018 **Gray Area: a podcast about growing old in New York**
Life Outside the Lines: Creating art with dementia

2/2018 **AJSM February 2018 Author Online Interview, AOSSM publishing**
Discussing "Effects of the New York State Concussion Management and Awareness Act ("Lystedt Law") on Concussion-Related Emergency Health Care Utilization Among Adolescents, 2005-2015,"

2/6/2018 **Neurology (AAN) Podcast**
Covering *Neurology: Clinical Practice* publication "Medical Retirement from Sport for Neurological Reasons: a practical guide for a difficult discussion"

2/2/2018 **Wired Magazine (online)**
"Could a vaccine protect football players from concussions?"
Features technology in NoMo Diagnostics

1/30/2018 **CUMC newsroom online**
"Outfitting a Football Helmet to Diagnose Concussion**"**

12/1/2017 **The Inside Press (Westchester newspapers)**
"Recognizing Dementia: When it's Time to Seek Care"

11/17/2017 **CUMC newsroom online**
"Drop-Off in Dementia in Northern Manhattan Echoes National Trend"

8/2017 **NEJM Journal Watch (podcast):**
Alcohol and Cognitive Aging Review

2/28/2017 **AAN/PR Newswire Press release (online and in print)**
"Women May Be at Higher Risk for Sports-Related Concussion than Men"; republished in multiple news outlets in US, UK, Australia, and in Spanish worldwide
Related:
"Among College Athletes, Concussion Risk May Be Higher in Women" (CUMC)
"Female Athletes More Prone to Recurrent Concussion"
(Med Page Today)

	"Concussions More Likely in Female Athletes" (Health Day)
1/29/2017	**Uni Mas (Television, Univision NYC affiliate)** "Contigo en la Comunidad" (discussing Alzheimer disease in Spanish)
3/15/2016	**Reuters (Life, online)** "Gum disease may signal faster Alzheimer's decline"
1/6/2016	**Discovery News (online)** "What Can We Learn From Michael Keck's Brain?"
1/4/2016	**Reuters Health (online)** "Dead college football player leaves clues of concussions' toll on brain"
1/4/2016	**STAT News (online)** "After concussions, young football player's plea: Donate my brain to science"
1/4/2016	**Health Day News (online)** "College Football Player's Autopsy May Offer Clues to Brain Trauma"
12/4/2015	**Columbia Magazine (print and online)** "Picturing Alzheimer's"
8/5/2015	**NPR (Health Shots Online Feature)** "Sharing Art Helps Medical Students Connect With Dementia Patients"
6/12/2015	**CBS This Morning (National TV)** Discussed concussion monitoring/protection in the context of Women's World Cup Soccer
4/30/2014	**WNYC Brian Lehrer Show (Broadcast and online NPR Radio)** "Eyes on the Prize" (concussion in competitive cheerleading)
12/15/2013	**NBC Today Show (National TV)** Discussed chronic traumatic encephalopathy in context of American professional football
11/6/2013	**CBS New York (NYC area TV and online)** Discussed publication regarding childhood musical training and the effect on cognitive aging

10/24/2013	**NYU Arthur L. Carter Journalism Institute (online)** "Art Program in Harlem Strives to Improve Quality of Life for Those Affected by Alzheimer's and Dementia"
10-11/2012	**Neurology Now (print)** "One Precious Gift" Discussion of brain donation as it relates to notable patient
8/23-24/2012	**CBS New York (NYC area TV and online)** "Dementia and Dental Health" Discussion of peer-reviewed publication #2
5/11/2012	**Uptown Radio (online radio)** "Fighting Effects of Alzheimer's With Art And Interaction" Discussion of Arts & Minds and related works
1/31/2012	**Center for Advancing Health: Health Behavior News Service (online)** "Study Illuminates Ethnic Disparities in Diabetes and Cognitive Impairment" Discussion of peer-reviewed publication #5
5/24/ 2011	**World Journalism Institute Times Observer (online and print)** "Attacking Alzheimer's Disease: New Non-profit Uses Art to Fight Dementia" Discussion of Arts & Minds and related works
5/2010	**Good Housekeeping (print)** Discussion of peer-reviewed publication #2
11/16/2009	**BBC Radio 5 Live (terrestrial and online radio)** "Up All Night" with Dotun Adebayo Discussion of peer-reviewed publication #2
11/13/2009	**Reuters (online and print)** "Trouble thinking? Better see the dentist" Discussion of peer-reviewed publication #2
10/15/2009	**Neurology Today (online and print)** "Children in Minority Communities are Taught to Recognize Stroke Symptoms" Discussion of peer-reviewed publication #1

12/ 2005 **Neurology Today (online and print)**
"Pilot Study Reports High Rates of Intracranial Hemorrhage in African-Americans Treated with tPA"
Discussion of Abstract #1

IN THE JUDICIAL COUNCIL OF THE UNITED STATES
COURT OF APPEALS FOR THE FEDERAL CIRCUIT

In Re Complaint No. 23-90015

DECLARATION OF DR. JAMES M. NOBLE

I, **Dr. James M. Noble**, declare pursuant to 28 U.S.C. § 1746 as follows:

1. I am a Professor of Neurology at Columbia University Irving Medical Center (CUIMC). I have been a member of the faculty at Columbia University since 2008. I am also appointed in the Taub Institute for Research on Alzheimer's Disease and the Aging Brain and the GH Sergievksy Center, both at CUIMC.

2. I have prepared a report in this matter dated January 30, 2025, to which was attached a copy of my curriculum vitae (CV).

3. Both my report and CV are true and correct to the best of my knowledge and the report presents my professional opinions.

4. I have been compensated for my work in this matter at my customary hourly rate of $400/hour.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: February 6, 2025

Dr. James M. Noble