INSTITUTE ON AGING

Institute on Aging
University of Pennsylvania

STRATEGIC PLAN FOR ALZHEIMER'S DISEASE AND RELATED DEMENTIAS

2023 - 2028

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MISSION:
To improve the quality and quantity of ADRD research, the IOA Strategic Plan for Alzheimer's disease and related dementias (ADRD) will use multidisciplinary approaches to strive for groundbreaking discoveries to advance the field.

VISION:
A world with effective interventions to ameliorate, prevent, and cure Alzheimer's disease and related dementias.

PURPOSE:
Improve the lives of both patients and their loved ones through scientific advances in Alzheimer's disease and related dementias.

VALUES:

- **Shared service to community and goals**
- **Celebrate others**
- **Care for each other**
- **Embrace inclusivity**

INTRODUCTION

The number of older Americans (> age 65) is expected to climb to almost 81 million by 2040 and have profound effects for all aspects of individual lives, society and healthcare. Given that aging is the greatest risk factor for ADRD, leading to a growing prevalence of dementia and the likelihood of a public health crisis, the search for better treatments and care models has become a focus, as reflected in the development of a national plan – the National Alzheimer's Project Act (NAPA). In parallel, the National Institute of Health has demonstrated substantial commitment to ADRD research with congressionally mandated funds dedicated to ADRD research beginning in FY2014 (see Figures 1 and 2). Thus the overall NIA budget has grown from ~$900 million before the passage of NAPA to $3.5 billion in FY2022. Funds earmarked for ADRD research have increased over six fold over this time period. The University of Pennsylvania has exhibited significant growth during this period leveraging this increased funding (Figure 2). However, compared to our peer academic institutions and to the overall NIA budget, we have not been able to take full advantage of the opportunities provided through the historic increase in funding, which was one motivation behind the development of this Strategic Plan for Alzheimer's Disease and Related Dementias. Through a more coherent vision that addresses areas for growth and the tremendous opportunities afforded by not only the increased NIH funding, but the prodigious intellectual strengths and collaborative spirit of Penn and a strong tradition in ADRD research, we hope to be a world leader in discovery and translation.

Over the five years of the plan, we anticipate that we will expand on existing and internationally recognized programs at Penn, as well as add new faculty and infrastructure to support the many new opportunities. We will span and connect basic research to clinical practice through translational work. We plan to scale investments to support this growth and communicate our successes to multiple audiences that include patients, the general public, other academic institutions, NIA and all of the National Institutes of Health and University of Pennsylvania leadership.

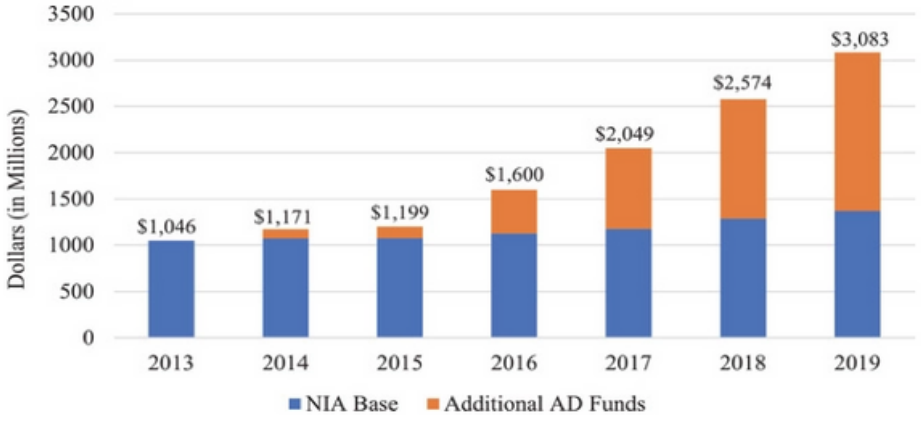

Figure 1: NIA Funding from 2013 to 2019. Additional congressionally mandated funds dedicated to ADRD research is shown in orange (source: doi.org/10.1002/alz.12392).

Strategic Priority 1: Scale Investments to Grow Capacity

Rationale:

The historic increase in ADRD research funding by the NIA has resulted in an increase in successful grant applications by Penn faculty and trainees with a ~2.5 fold increase in NIA funding since 2010 (Figure 2). This is a unique environment where obtaining NIA funding is not as competitive compared to historical standards, with NIA paylines for ADRD research currently around the 30th percentile. However, there is a need to continue to support ADRD research, particularly with funding streams that support general infrastructure and collaboration between investigators across the spectrum of ADRD research from basic science to translational research, clinical research, health policy research, bioethics, and epidemiology. While the quality of Penn ADRD research faculty is exceptional, there is a general lack of cohesion across disciplines. The Institute on Aging is well positioned to support such funding streams from philanthropic, governmental and industry partners in support of infrastructure, endowed chairs, and a more cohesive ADRD research center.

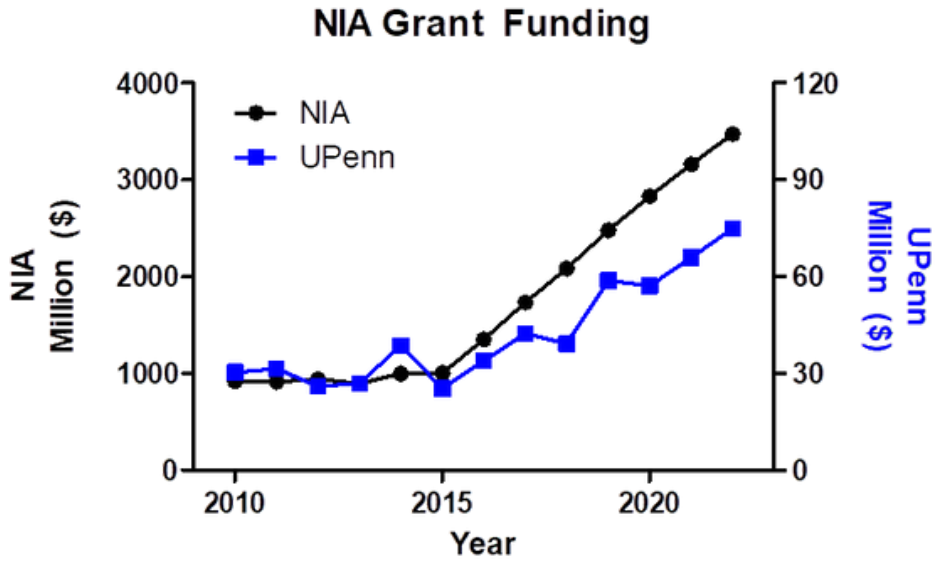

Figure 2: NIA Grant Funding FY2010 to FY2022. Total NIA funding, including both ADRD and non-ADRD funding, is shown in black. Total Penn funding from the NIA is shown in red.

Objective 1.1: Prioritize ADRD philanthropy to match growth and allow for leveraging of unique Penn strengths (Identify potential philanthropic sources of funding for endowed chairs and a named ADRD center)

Objective 1.2 : Support existing and new grants (Coordinate multicomponent PPG and multi-PI grants)

Objective 1.3: Leverage intellectual property and discoveries for additional funding streams

Strategic Priority 2: Deepen the Bench of World-Class Talent

Rationale:

Although Penn investigators have grown NIA grant funding by a factor of ~2.5 since 2010, the total NIA budget has increased ~3.8 fold over the same time period (Figure 2). As the total NIA budget includes non-ADRD grant funding, ADRD-specific funds have increased over 6 fold. The growth in Penn ADRD research funding has been achieved with limited growth in the numbers of ADRD faculty. Indeed, NIA research project grant funding per principal investigator (PI) has grown considerably since 2010 (Figure 3). Similarly, the number of PI's with over $1M in NIA funding continues to increase. This indicates that the number of independent Penn ADRD faculty is the rate limiting factor in terms of capturing more NIA funding. It also indicates that the existing ADRD faculty at Penn are likely stretched thin. Feedback from faculty indicates that we are overworked and overcommitted, often pushing the legal limits in terms of percent effort on NIH grants. It is difficult to ascertain how this affects faculty wellbeing, but faculty feedback suggests that mental health and work-life balance have been negatively affected. Finally, several prominent ADRD Penn faculty have died or retired over the last few years, with the likely retirement of several additional ADRD Penn faculty in the next couple of years. Thus, a forward-looking plan to not only maintain but increase the numbers of quality ADRD faculty is required, in conjunction with means to reward and retain existing faculty.

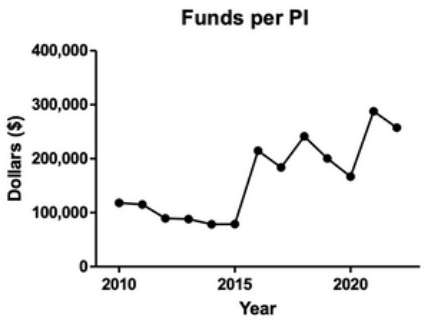

Figure 3: Research Project Grant Funds per PI.

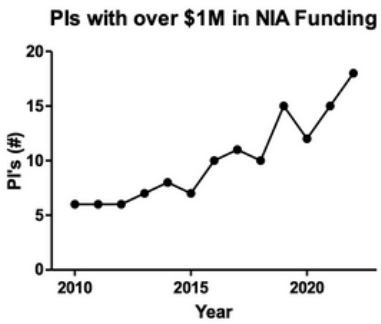

Figure 4: Penn PI's with over $1M in NIA Funding.

Objective 2.1: Fill specific gap areas requiring targeted recruitment including basic, mechanistic work focused on AD, translational expertise (basic, clinical, therapeutic)

Objective 2.2: Add depth in areas which already have strengths to match demand to ensure robust succession: informatics/data science, biomarker development, pathology, clinical research (trials, interventional and observational)

Objective 2.3: Increase endowed chairs and infrastructure to reward/incentive/retain faculty

Objective 2.4: Develop innovative recruitment strategies to accelerate growth of talent pipeline

Strategic Priority 3: Leverage Unique Strengths Toward Competitive Advantage

Rationale:

Penn has a number of unique and internationally-recognized strengths in ADRD research, including a tradition of integration across multiple neurodegenerative conditions and their interaction, spanning both basic and clinical research. Recognition of the critical inter-relations of these conditions traditionally studied in isolation (i.e. Alzheimer's Disease, Frontotemporal Dementia, Parkinson's Disease, etc) has only recently become a focus of the broader field. Thus, Penn is well-positioned to lead the way to unlock shared mechanisms and interactions that will lead to targeted therapeutics and a precision medicine based approach. Other strengths specific to ADRD research include diverse clinical and ethnoracial cohorts, basic science of aging, policy and health economics, biomarker discovery, and genomics. Further, there are new technologies (e.g. mRNA, cellular therapeutics) and domains within the Penn community that could be proactively ntegrated into ADRD research. A coherent plan to strategically build off of these programs in the context of funding and scientific growth are needed to maximize the impact of work at Penn.

Objective 3.1: Build upon Penn's unique integration of neurodegenerative disease research

Objective 3.2: Build infrastructure and projects around diverse Penn Medicine clinical and research populations

Objective 3.3: Identify new opportunities to increase cross disciplinary science (population science, health policy, bringing non-ADRD faculty into ADRD space)

Strategic Priority 4: Communicate Multi-disciplinary Advances and Impact to Stakeholders

Rationale:

There is impressive work being done and to be done across Penn in the ADRD space, but an effective communications strategy is the key to bringing that work and its researchers together to reach our goals of fostering collaborations within and beyond the university, educating diverse audiences, supporting research recruitment and retention, and enhancing the Penn brand internationally. We seek to support these goals by tailoring proven communications strategies, from internal dialogues between Penn professionals to guiding the global conversation about ADRD research. Some of this work will be managed by existing staff support and technologies at the Institute on Aging and related organizations across the university, but this collaborative team will also use resources across the university and beyond for larger-scale projects.

Objective 4.1: Drive conversations about ADRD research and care to educate diverse populations

Objective 4.2: Collaborate with third parties to enhance the profile, visibility and brand recognition of Penn ADRD research

Objective 4.3: Incentivize broader involvement in communications to foster collaboration across disciplines at Penn and beyond

Objective 4.4: Direct effective communication strategies to promote recruitment and retention of diverse research participants

Strategic Priority 5: Increase Infrastructure to Meet Scaled Demand and Optimize Collaboration

Rationale:

Enhanced infrastructure is necessary to accommodate the expansion of new ADRD faculty and research at Penn. We envision exponential growth over the next 5 years as we take advantage of the many opportunities provided through the continuing increases in NIA funding for ADRD research. Notably, the growth in NIA funding thus far has been primarily due to increased funding of research project grants (RPGs) with a relatively smaller increase in Center grants such as the Penn ADRC, ADGC, NIAGADS, and GCAD (Figure 5). As RPGs do not support infrastructure, there is a need to develop a plan to support the development of facilities and infrastructure to support continued growth in research activity. Investment is needed for new space, ideally integrated to accommodate multidisciplinary translational work linking basic and clinical research, as well as large equipment to support data acquisition, storage and analysis.

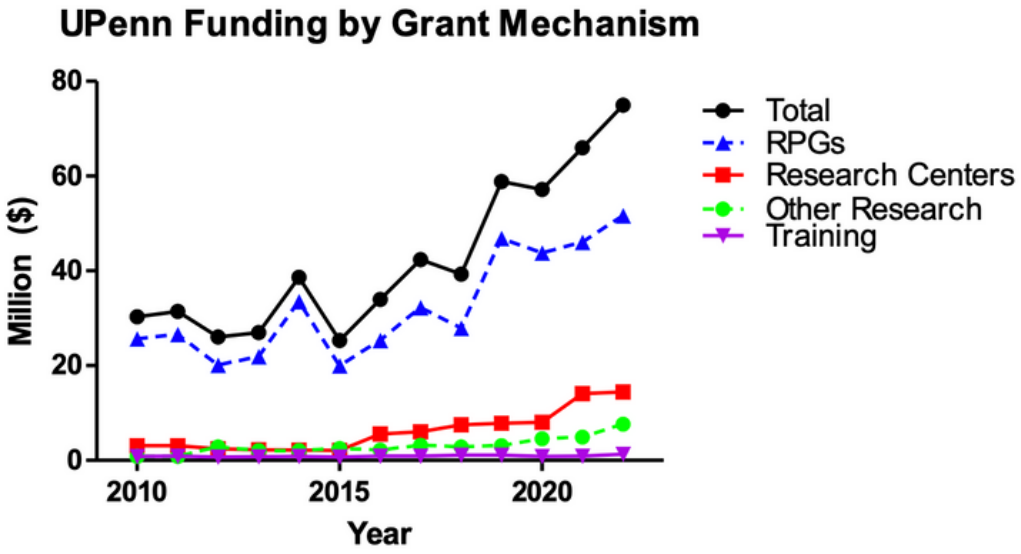

Figure 5: Penn funding from the NIA by grant mechanism.

Objective 5.1: Secure more physical space to support faculty recruitment and expanding grant portfolio

Objective 5.2: Create integrated research space (floors/collaboration spaces/building for clinical + basic research)

Objective 5.3: Invest in resources for larger scale multidisciplinary research (computing, data storage, biospecimen storage, MR/PET scanners)

Strategic Priority 6: Promote a culture of translation from discovery to clinical implementation

Rationale:

With the emergence of FDA-approved, disease-modifying medicines we are entering a new era of therapeutics intervention rather than clinical nihilism. Therapies targeting specifc pathologies, such as monoclonal antibodies to Aβ, will almost certainly have variable efficacy given mechanistic and pathological heterogeneity. Thus, a precision medicine approach will be necessary for refinement of therapeutic strategies and optimal efficacy. Penn is a leader in the development of neuroimaging, biofluid, and genomic markers of this heterogeneity and, more broadly in translational research. Efforts to capture clinical data, such as the Penn Biobank, offer a pathway for clinical practice to serve as a laboratory for translation and enhanced clinical care. Expedited and aggressive integration of basic and clinical research into the Penn Medicine Enterprise will catalyze advancements in clinical care and set a template for more seamless and rapid translation in the future.

Objective 6.1: Integrate clinical care and research across the entire Penn Medicine enterprise to establish Penn as a leader in translational research

Objective 6.2: Establish appropriate administrative support, including regulatory affairs, to catalyze drug discovery and nimble translation

Objective 6.3: Leverage emerging therapeutics aggressively to establish clinical practice as a laboratory for precision medicine

WAYS WE WILL MEASURE SUCCESS

To promote implementation and periodic re-evaluation of this strategic plan, the following measures will be tracked annually, typically coinciding with the generation of the annual IOA report.

INTERNAL

Financial

- Total Research Funding (Federal and other grants, Philanthropy, Industry)
- Number of new PPG grants

Faculty

- Number of new ADRD faculty
- Number of endowed chairs

Professional Integration/Connection

- Number of new internal collaborations

EXTERNAL

Research Eminence

- Number of high profile publications
- Number of ADRD-related grants
- Number of studies leveraging Penn biobank, medical records
- Number of novel discoveries that reach clinical trials

Media/Public Recognition

- Number of media impressions
- Subscriber retention rates
- Metrics for media outlets such as Twitter, Facebook, PMC and ADRC websites

STRATEGIC PLANNING PROCESS AND STAKEHOLDER ENGAGEMENT

1. Setting A Common Vision/Mission, Brand, and Set of Values to Drive Success

The IOA/ADRD team kicked off the strategic planning initiative by reviewing current progress and discussing a compelling, forward-looking, and exciting view of its future direction. From these discussions, the team developed statements of Mission, Vision, and Purpose, as well as a common set of core values to drive the way people think, feel, and act every day.

2. Identifying Strategic Priorities to Accomplish Mission and Generate Impact

The Team identified a draft set of strategic priorities that realize IOA/ADRD's vision and allow for demonstrating core values. The draft priorities considered resource levels, importance, and impact. Additionally, the Team interviewed a set of twelve stakeholders representing leadership at Penn Medicine and different academic domains involved in ADRD research to identify their ideas and input – focusing on strengths to leverage, gaps to fill, how best to take advantage of investments, novel ways of organizing, and how to enhance ADRD research. All of the draft content was compiled into a format and sent to the stakeholders for a final review.

3. Implementing a Successful Plan

With the final Strategic Plan in place, the Team discussed ways to avoid and mitigate common execution problems. The Team also generated a set of measures for gauging progress over time, along with identified roles and responsibilities, timelines to be achieved and ways for communications to guide the planning effort.

4. Sustaining and Monitoring the Plan's Success

The Team identified ways continued progress will be tracked and discussed, how stakeholders will stay involved, and ideas for how the Plan can be updated dynamically over time.

The Institute on Aging Strategic Plan for Alzheimer's Disease and Related Dementias

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www.med.upenn.edu/aging

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