Research Priorities and Opportunities at the National Institute on Aging (NIA)

ASBMB Webinar
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National Institute on Aging
NIA Programmatic Divisions:

- **Division of Aging Biology**
  - molecular, cellular, and genetic research on the mechanisms of aging

- **Division of Behavioral and Social Research**
  - social, behavioral, and economic research and research training on the processes of aging at both the individual and societal level

- **Division of Geriatrics and Clinical Gerontology**
  - clinical and translational research on health and disease in the aged

- **Division of Neuroscience**
  - understanding of neural and behavioral processes associated with the aging brain; Alzheimer’s Disease and related dementias
Division of Aging Biology

• Basic research for the discovery of molecular mechanisms of aging.

• Applied research for development of analytical tools and resources to support discovery in aging biology.

• Translational research for healthy aging.
Geroscience:

- The geroscience hypothesis: Slowing the rate of aging reduces morbidity and allows greater function, yielding greater health at older ages.
Elucidate the pathways by which social, psychological, economic, and behavioral factors affect health at older ages

Identify the causal mechanisms driving these associations

Target these mechanisms to modify individual and organizational behaviors to promote health, prevent disease, and optimize health care

Cross-cutting themes:
- Understanding and Addressing Health Disparities
- Life Course Perspective on Aging Processes
- Biobehavioral and Biosocial Integration

Data Resources
Research Networks
Centers: RCMAR, Roybal, Demography & Economics

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Division of Geriatrics and Clinical Gerontology

**Geriatrics**

Focus on the *aged*:

- Treating or preventing problems in older persons
- Previously undefined pathologies in old age
- Late-stage disease
- Comorbid interactions

**Clinical Gerontology**

Focus on *aging* over the life span:

- Altering progressive aging changes
- Processes leading to age-related pathologies
- Early pathophysiology
- Common factors leading to multiple age-related pathologies

**Shared foci**: Disease/disability prevention in old age, progression of aging pathologies in late life
Division of Neuroscience

- **Strategic Development and Partnerships Office**
  - development on all aspects of brain aging, Alzheimer's disease, and related dementias

- **Population Studies and Genetics Branch**
  - Cognitive decline; morbidity/mortality; genomics (+integrated)

- **Neurobiology of Aging and Neurodegeneration Branch**
  - Neuroscience; basic science of AD; Integrative Neurobiology; sleep and biorhythms; BRAIN initiative

- **Behavioral and Systems Neuroscience Branch**
  - Cognitive neuroscience; sensory processes; motor function; Affective Neuroscience

- **Translational Research Branch**
  - Drug discovery and repositioning; data science; infrastructure

- **Clinical Interventions and Diagnosis Branch**
  - Biomarkers; clinical trials (pharm/non-pharm)
We’re here to help!

Notice f Funding Opportunities (NOFOs)

• Get new NOFOs in your inbox!

• **Sign up for "NIA Funding Opportunities"** for our monthly NOFOs email alert with the latest funding opportunities from NIA.
NIA and NIH Opportunities

• Always Contact your Program Officer!! (Research Contact)
• List: NIA sponsored NOFOs
  • 80+ NIA sponsored Active NOFOs and Notices
  • 245 Active NOFOs and NOSI in which NIA is signed on
  • https://www.nia.nih.gov/research/grants-funding
  • Check for RFA, PA, PAR, PAS and NOSI
• NACA Approved Concepts: (NIA Council)
  • https://www.nia.nih.gov/approved-concepts
• Search for NOFOs by key word
  • https://grants.nih.gov/funding/index.htm
• Subscribe
  • Weekly NIH Guide to Grants and Contracts
  • https://grants.nih.gov/grants/guide/listserv_dev.htm
Unsolicited NIH Parent Announcements

- NIA participates in the **NIH Parent** Announcements for the following mechanisms:
  - Check if: “**Clinical Trial** Required/Optional/ Not Allowed”
  - Research Grants:
    - R03, R21, R01
    - SBIR and STTR: R41/R42 and R33/R44
  - Training, Career Development and Fellowships
    - T32, T35, K01, K02, K08, K23, K24, K25, K99/R00, F30, F31, F32, F33
  - Research **Supplements** (way to break into the AD field)
  - Conference Grants **R13**; Loan Repayment program (LRP)
NIA ‘Parent’ Announcements

• NIA Program Project Applications (P01 Clinical Trial Optional) PAR-19-314

• Complex Integrated Multi-Component Projects in Aging Research (U19 Clinical Trial Optional) PAR-19-374: large-scale, complex research projects with multiple highly integrated components

• NIA Multi-site Clinical Trial Implementation Grant (R01 Clinical Trial Required) PAR-19-302
# Research Mechanism Comparison: Which is right for you?

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<th>Mechanism</th>
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| **R01** Research Project Grants | - Standard 5-year award; no budget limit but need to reflect the actual needs of the proposed project  
- Advanced/established independent work |
| **R21** Exploratory/Developmental Grants | - Smaller risk 2-year award; $200K direct costs per year  
- No preliminary data required (but may include) |
| **R03** Small Research Grants | - $50-100K direct costs per year for up to two years  
- Pilot research that is likely to lead to a subsequent individual R01 |
Alzheimer's Disease (AD) and Alzheimer's-Disease-Related Dementias (ADRD)

The ADRDs include:

- Frontotemporal disorders (FTD)
- Lewy body dementia (LBD)
- Vascular contributions to cognitive impairment and dementia (VCID)
- Mixed etiology dementias (MED)
Alzheimer’s Disease and Related Dementias NOFOs
http://www.nia.nih.gov/AD-FOAs

UNDERSTANDING THE COMPLEX BIOLOGY OF AD/ADRD

MOLECULAR BASIS FOR AD HETEROGENEITY and mixed pathology
DYNAMIC INTERACTION BETWEEN PERIPHERAL SYSTEMS AND BRAIN AGING/AD
UNDERSTANDING NEURODEGENERATION IN THE CONTEXT OF AGING
COMPLEX BIOLOGY OF RESILIENCE

CELL SENESCENCE
MICROBIAL PATHOGENS
PROTEOME REGULATION
OSCILLATORY GENE EXPRESSION

SEX DIFFERENCES AND AD RISK
COMMON MECHANISMS OF NEURODEGENERATION
MECHANISMS OF NPS IN AD
OLIGOMER/PFF SEED BANK

NIH National Institute on Aging
Total Active NIA AD/ADRD Clinical Trials

Total AD/ADRD Trials: 442

- 65 Pharmacological
- 212 Dementia Care and Caregiving
- 139 Non-Pharmacological
- 26 Other Trials
Major AD/ADRD Program Announcements:

- Research on Current Topics in Alzheimer's Disease and Its Related Dementias (R01 Clinical Trial Optional) PAR-22-093 (check NOSIs)
  - Age-Associated Metabolic Changes
  - in vivo Synaptic Function
  - Sex and Gender Differences
  - Sensory and Motor System Changes as Predictors
  - Selective Cell and Network Vulnerability in Aging
  - Complexity in the Molecular and Cellular Mechanisms
  - Endosomal Trafficking

- Research on Current Topics in Alzheimer's Disease and Its Related Dementias (R21 Clinical Trial Not Allowed) PAR-22-094 (+NOSIs)
Other AD/ADRD Programs

- Early Stage and Late Clinical Trials for the Spectrum of Alzheimer's Disease and Age-related Cognitive Decline (R01 Clinical Trial Optional) PAR-21-359 (+NOSIs)
  - Addressing gaps in screening

- Alzheimer's Drug-Development Program (U01 Clinical Trial Optional) PAR-22-047 (+NOSIs)
  - Radiotracers for diagnostics
  - Preclinical diagnostics;
  - novel small-molecule and biologic drug candidates
  - medicinal chemistry; pharmacokinetics (PK); Absorption, Distribution, Metabolism, Excretion, Toxicology
Other AD/ADRD Programs

• Translational Bioinformatics Approaches to Advance Drug Repositioning and Combination Therapy Development for Alzheimers Disease (R01 Clinical Trial Optional) PAR-20-156

• Alzheimer's Disease Research Centers (P30 Clinical Trial Not Allowed) RFA-AG-21-019
  • Development of more effective approaches to prevention, diagnosis, care, and therapy of AD/ADRD
  • Opportunity to collaborate

• Integrative Research to Understand the Impact of Sex Differences on the Molecular Determinants of AD Risk and Responsiveness to Treatment (U01 Clinical Trial Optional)
  • PAR-23-082
Other AD/ADRD Programs

• Small Research Grant Program for the Next Generation of Researchers in AD/ADRD Research:
  • Area of Focus Systems Biology (R03 Clinical Trial Not Allowed)
  • Area of Focus Basic Science (R03 Clinical Trials Not Allowed)
  • Area of Focus Archiving and Leveraging Existing Data Sets
  • R03 mechanism; being reissues now under one NOFO

• Look out for the Administrative Supplement program: AD Supplements to non-AD grants
General NIA Topics
(non-Alzheimer's Disease)
General (non-AD/ADRD) NOFOs:

• Research Infrastructure Development for Interdisciplinary Aging Studies (R61/R33 - Clinical Trial Optional) PAR-23-053
  • develop research infrastructure requiring interdisciplinary partnerships

• Interorgan Communication in Aging (U01 Clinical Trial Not Allowed)
  • U01; molecular mechanisms and consequences of age-related alterations in interorgan communication

• Nathan Shock Centers:
  • Supports specialized cores that provide services to support aging biology research
  • Funds pilot studies and national meetings
Council Concepts approved

https://www.nia.nih.gov/approved-concepts

• Seamless Early-Stage Clinical Drug Development (Phase 1 to 2a) for Novel Therapeutic Agents for AD/ADRD
• Small Research Grant Program for the Next Generation of Researchers in AD/ADRD Research
• Analytical and Clinical Validation of Biomarkers for AD/ADRD
• Chimeric Antigen Receptor (CAR) Approaches to AD/ADRD
• Development and Validation of Harmonized Methodologies to Measure NAD+ and Related Metabolite Levels in Clinical Trials
Crossover NOFOs
-NIA signed on
NIH BRAIN Initiative®

• *Brain Research Through Advancing Innovative Neurotechnologies*
  • Accelerate the development and application of innovative technologies
    • Treat, cure, and even prevent brain disorders
  • Explore major gaps in our current knowledge
  • *Partners with DARPA, IARPA, NSF, FDA*
  • [https://braininitiative.nih.gov/](https://braininitiative.nih.gov/)
BRAIN NOFOs (NDS and MH)

- BRAIN Initiative: Engineering and optimization of molecular technologies for functional dissection of neural circuits (UM1 Clinical Trial Not Allowed)
- BRAIN Initiative: Development and Validation of Novel Tools to Probe Cell-Specific and Circuit-Specific Processes in the Brain (R01 Clinical Trial Not Allowed)
- BRAIN Initiative: Development of Novel Tools to Probe Cell-Specific and Circuit-Specific Processes in Human and Non-Human Primate Brain (UG3/UH3 Clinical Trial Optional)
- BRAIN Initiative: New Technologies and Novel Approaches for Recording and Modulation in the Nervous System (R01 Clinical Trial Not Allowed)
NIH HEAL Initiative

- Helping to End Addiction Long-term® Initiative
- Mission: speed scientific solutions to stem the national opioid public health crisis
  - Understanding, managing, and treating pain
  - Improving prevention and treatment for opioid misuse and addiction
HEAL NOFOs

• HEAL Initiative: Development and Validation of Non-Rodent Mammalian Models of Pain (R01 Clinical Trial Not Allowed)

• HEAL Initiative: Team Research for Initial Translational Efforts in Non-addictive Analgesic Therapeutics Development [Small Molecules and Biologics] (U19 Clinical Trial Not Allowed)

• HEAL Initiative: Discovery and Validation of Novel Targets for Safe and Effective Pain Treatment (R01 Clinical Trial Not Allowed)

• HEAL Initiative Integrated Basic and Clinical Team-based Research in Pain (RM1 Clinical Trial Optional)
General Grantsmanship Tips:

• Read the entire FOA! And Apply EARLY
• Identify and utilize your collaborators
  • Assemble a team of reviewers
  • Look at the review criteria in FOA
• Know your institutional officials
  • Remember: Award goes to the Institution!
  • Know your deadlines
• NIH staff (contacts at end of FOA)
• Use extensive internet resources
  • Review examples of funded applications
  • Review tutorials

Remember: Always Resubmit!!!
Grant-writing Resources for NIH Research Grants

- All About Grants - A multi-part site, including sections on Grant Application Basics, How to Plan a Grant Application, How to Write a Grant Application. These documents are in PDF form (NIAID)

- Quick Guide for Research Grant Applications (NCI)

- Tips for New NIH Grant Applicants (NIGMS)

- Common mistakes in grant applications (NINDS)
  [http://www.ninds.nih.gov/funding/grantwriting_mistakes.htm](http://www.ninds.nih.gov/funding/grantwriting_mistakes.htm)

- Writing a grant application: A Technical Checklist

- Annotated Sample R01 grant (from NIAID)
Other Resources:

• **NIA Training and Career Development:**
  https://www.nia.nih.gov/research/training

• **NIA New and Early Stage Investigators**

• **NIA Grants & Funding**
  • https://www.nia.nih.gov/research/grants-funding
THANK YOU!

QUESTIONS???

Contact information:

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