WEBINAR
RESILIENCE AND RESERVE: DEFINING, REFINING, AND ADVANCING RESEARCH IN AGING

THURSDAY APRIL 30 2020
2-3 pm ET (11 am-12 pm PT)
A few housekeeping items...

➢ All lines are muted

➢ Have a question?

   Enter in the Q&A box at the bottom of screen

➢ Rolling—we will be recording…
WEBINAR

RESILIENCE AND RESERVE: DEFINING, REFINING, AND ADVANCING RESEARCH IN AGING

THURSDAY APRIL 30 2020
2-3 pm ET (11 am-12 pm PT)
Jay Magaziner, PhD, MSHyg

Member,
RCCN Executive Committee

Director,
Center for Research on Aging,
University of Maryland.

Professor and Chair, Department of Epidemiology and Public Health,
University of Maryland School of Medicine; Baltimore, MD
The objective of the Research Centers Coordinating Network (RCCN) is to initiate new cross-disciplinary collaborative networks that bring together key thought leaders from each of the six NIA center programs to align approaches across programs that will uncover synergies and insights that lead to novel collaborations.

The RCCN is funded by the National Institute on Aging of the National Institutes of Health under Award Number U24AG058556. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.
The webinar will explore:

- What is unique about the resilience paradigm
- What do we mean by resilience and reserve
- How is the NIA supporting programmatic developments in resilience and reserve
- Where to get started: directory of NIA resources
Basil Eldadah, MD, PhD
Supervisory Medical Officer
Division of Geriatrics and Clinical Gerontology (DGCG),
National Institute on Aging

Suzana Petanceska, PhD
Program Officer,
Division of Neuroscience,
National Institute on Aging

Giovanna Zappala, PhD, MD
Health Science Administrator,
Division of Geriatrics and Clinical Gerontology (DGCG),
National Institute on Aging

Dana Plude, PhD
Deputy Director,
Division of Behavioral and Social Research (DBSR),
National Institute on Aging
What’s Unique About Resilience

Basil Eldadah, MD, PhD
Division of Geriatrics and Clinical Gerontology
NIA

RCCN Resilience Webinar
April 30, 2020
resilience (rē-zil’yens) [L. resilio, to spring back, rebound].

1. Energy (per unit of volume) released upon unloading.

2. Springiness or elasticity

Stedman’s Medical Dictionary, 25th Edition
Concepts invoked with resilience

- Responding to a stressor
- Bouncing back
- Resistance
- Recovery
- Adaptation
- Allostasis (maintaining homeostasis)
- Reserve
- Post-traumatic growth / thriving
- Hormesis
Resilience through the lens of the stress-response paradigm

Diagram:
- X-axis: Time
- Y-axis: Outcome
- Stressor event

Physiologic Mechanisms
The Question...

Is X resilient?

Resilient to what?

Resilient by which outcome?

What predicts / is associated with X’s resilience?

What makes X resilient?

How do we get somebody/something like X to be resilient?
What is unique about the stress-response paradigm?

- Stressors and outcomes are identified
Stressors and outcome identified

STRESSOR; e.g.:
- Injury
- Toxin
- Infection
- Disease
- “Aging”
- Life event

OUTCOME; e.g.:
- Survival
- Functional status
- Symptoms
- Indicators of health or disease
- Health-related quality of life
- Subjective well-being

Physiologic/Behavioral Responses

MODERATORS

Context
Chronicity
Multiplicity

TIME
What is unique about the stress-response paradigm?

• Stressors and outcomes are identified
• Longitudinal with repeated measures
What is unique about the stress-response paradigm?

• Stressors and outcomes are identified
• Longitudinal with repeated measures
• Person-centered
The Question...

Is X resilient?

- Resilient to what?
- Resilient by which outcome?
- Who/what determines this??

What predicts / is associated with X’s resilience?

What makes X resilient?

How do we get somebody/something like X to be resilient?
**OUTCOME; e.g.:**
- Survival
- Functional status
- Symptoms
- Indicators of health or disease
- Health-related quality of life
- Subjective well-being
What is unique about the stress-response paradigm?

- Stressors and outcomes are identified
- Longitudinal with repeated measures
- Person-centered
- Informs a unique class of interventions
Example interventions based on the stress-response paradigm

- Vaccination
- Exercise (“pre-habilitation”)
- Calorie / nutrient restriction
- Ischemia / hypoxia
- Heat / cold exposure
resilience (rē-zil’yens) [L. resilio, to spring back, rebound].

1. Energy (per unit of volume) released upon unloading.

2. Springiness or elasticity
What is unique about the stress-response paradigm?

- Stressors and outcomes are identified
- Longitudinal with repeated measures
- Person-centered
- Informs a unique class of interventions
- Prevention-oriented
What is unique about the stress-response paradigm?

- Stressors and outcomes are identified
- Longitudinal with repeated measures
- Person-centered
- Informs a unique class of interventions
- Prevention-oriented
Bruce S. McEwen, Ph.D. (1938-2020)

ALFRED E. MIRSKY PROFESSOR

IMMUNOLOGY, VIROLOGY, AND MICROBIOLOGY | MECHANISMS OF HUMAN DISEASE | NEUROSCIENCES AND BEHAVIOR | STEM CELLS, DEVELOPMENT, REGENERATION, AND AGING

Studies the molecular mechanisms underlying the effects of stress and sex hormones on the brain.
Thank you
Resiliencies at the NIA: A Collection of Multiple Tales …

Giovanna Zappalà, Ph.D, M.P.H.
National Institute on Aging
Conceptual Framework for Resiliencies

**Individual Moderators (Resilience Resources)**
- Age
- Health Status
- Lifestyle
- Cognitive ability
- Socioemotional skills
- Social relationships
- Environmental Factors
  - Physical
  - Social
  - Biological

**Stressors**
- Infection
- Chemotherapy
- Early Life Adversity
- Acute or chronic psychological stress
- Alzheimer’s neuropathology

**Outcomes**
- Wound healing
- Survival
- Functional status
- Psychological well-being
- Cognitive function

**Physical and/or Behavioral Resiliencies**

![NIH Logo]
Developing a Test for Resilience

Resilience defined as “the capacity of every cell in an organism to respond to physical or chemical stresses, irrespective of cognitive involvement”

- Develop functional resilience tests to assess in young and middle-aged animals their overall ability to cope with physical and molecular stresses that mimic those encountered by human subjects.

- Select platforms that allow stratification among non-responders, normal responders and robust responders and assess whether they are predictive of lifespan and health span.

- Validate these platforms against interventions already known to improve lifespan and/or health span.
Interventions that Extend Lifespan May do so by Improving Healthspan
An Integrative Science Approach to Resilience:
The Notre Dame Study of Health & Well-being
(UH3AG057039; Cindy Bergeman, PI)
Study finds support for System Integrity Perspective: **Associations Between Brain Age and Cognitive Function are Present Since Childhood**

Predictors and Determinants of Age-Related Changes in Physiologic Resiliencies to Physical Stressors in Humans: a Paradigm to Develop Novel Interventions

- **Gap in knowledge** in our understanding of age-related changes in responses to physical stressors.

- Understanding resiliencies may offer **better predictive value** for short- and long-term health outcomes **than static measures** of function or indicators of disease.

- Insight into **changes in resiliencies across the lifespan** could reveal **aging mechanisms** underlying decrements in function and **factors contributing to the maintenance of healthy aging phenotypes**.

- The availability of **clinical tests of resiliencies** could improve clinical management of older patients -- **Effective Resilience Test**:
  - Well-defined, **quantifiable** stressor;
  - Reliably **measurable outcome** of interest **prior to**, and at multiple **time points after**, application of the stressor;
  - **Good predictive value** for short- and long-term clinical outcomes.

Division of Geriatrics and Clinical Gerontology
Focus on Potential Strategies **to Increase Resiliencies**

Hormesis and the concept of **Eustressors** … **Enhancing Resiliencies through Mild Stressors**—a **Primary Prevention Paradigm**
NIA Resilience-AD Program

RFA-AG-17-061
Department of Health and Human Services
Part 1. Overview Information

<table>
<thead>
<tr>
<th>Participating Organization(s)</th>
<th>National Institutes of Health (NIH)</th>
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<tbody>
<tr>
<td>Components of Participating Organizations</td>
<td>National Institute on Aging (NIA)</td>
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<tr>
<td>Funding Opportunity Title</td>
<td>Interdisciplinary Research to Understand the Complex Biology of Resilience to Alzheimer’s Disease Risk (R01)</td>
</tr>
</tbody>
</table>

This funding opportunity announcement invites comprehensive, cross-disciplinary studies aimed at building predictive molecular models of cognitive resilience based on high-dimensional molecular data collected in individuals who remain free of dementia despite being at high risk for Alzheimer’s disease.

RFA-AG-18-029
Department of Health and Human Services
Part 1. Overview Information

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</table>

Division of Neuroscience
Successful Trajectories of Aging: Reserve and Resilience in RatS

$7.4M project through NIA’s IRP. Longitudinal observations (over lifespan) to examine cell biological, behavioral, and other factors that mediate and predict successful brain and cognitive aging, and ultimately for testing interventions aimed at optimally positive aging trajectories. Will create open-source data and a sample hub to be shared with the entire aging science community.
Research opportunities and Needs for the development of Cell-based Assays to study Resiliencies

- Provide insight into aging mechanisms underlying decrements, as well as protective factors contributing to resilient phenotypes

- Facilitate comparison of research findings in pre-clinical models and in humans to identify potential common mechanisms

- Accelerate research progress of novel therapeutic targets/interventions to enhance resiliencies

- Validation of assays developed as research tools for use as new clinical diagnostics

Examples:
- Leverage/adapt existing cell-based methods
- Use of patient’s circulating stem/progenitor cells and co-cultures
- Simultaneous measurements of different cellular functions
Division of Aging Biology
▪ Felipe Sierra, Ph.D.
▪ Francesca Macchiarini, M.S., Ph.D.

Division of Behavioral and Social Research
▪ Lis Nielsen, Ph.D.
▪ Dana Plude, Ph.D.
▪ Jonathan King, Ph.D.

Division of Geriatrics and Clinical Gerontology
▪ Evan Hadley, M.D.
▪ Basil Eldadah, M.D., Ph.D.
▪ Chhanda Dutta, Ph.D.
▪ Giovanna Zappalà, Ph.D., M.P.H.

Division of Neuroscience
▪ Eliezer Masliah, M.D.
▪ Molly Wagster, Ph.D.
▪ Coryse St. Hillaire-Clarke, Ph.D.
▪ Suzana Petanceska, Ph.D.
NIA Division of Neuroscience

Understanding all Aspects of Cognitive Resilience at All Levels of Biologic Complexity

- **PAR-17-054**: Leveraging Existing Cohort Studies to Clarify Risk and Protective Factors for Alzheimer’s Disease and Related Dementias (R01)

- **PAR-17-047 / PAR-18-706 / *PAR-19-070 - NOT-AG-19-033**: Selective Cell and Network Vulnerability in Aging and Alzheimer’s Disease (R01)

- **RFA-AG-17-061 / RFA-AG-18-029**: Interdisciplinary Research to Understand the Complex Biology of Resilience to Alzheimer’s Disease Risk (R01)

- **RFA-AG-18-024**: Collaboratory on Research Definitions for Cognitive Reserve and Resilience to Alzheimer's Disease (R24)

- **RFA-AG-19-025 / RFA-AG-19-026**: Development of Personalized In Vitro Assays to Quantitatively Assess Age-related Changes in Cellular Resiliencies to Physiologic Stressors (R43/R44)/(R41/42)

- ***RFA-AG-21-015**: Network for Identification, Evaluation, and Tracking of Older Persons with Superior Cognitive Performance for Their Chronological Age (U19)

**NIA Program Directors: Dallas Anderson, Marilyn Miller, Brad Wise, Molly Wagster, Jonathan King, Suzana Petanceska**

*Active Funding Opportunities
NIH AD Research Summits:
Path to Treatment and Prevention

May 14-15, 2012
Feb 9-10, 2015
March 1-2, 2018

Formulate a blueprint for an integrated, translational research agenda that will enable the development of effective therapies (disease modifying and palliative) across the disease continuum for the cognitive as well as neuropsychiatric symptoms of Alzheimer's disease.
NIH AD Research Summits: Overarching Recommendations

- Recognize the heterogeneity and the multifactorial nature of the disease.
- Understand all aspects of healthy aging and resilience to AD to inform new prevention strategies.
- Support extensive molecular of existing and establish new cohorts to fill the gaps in large-scale human data needed to build predictive models of disease and wellness.
- Employ data-driven research paradigms such as systems biology and systems pharmacology.
- Enable rapid and extensive sharing of data, disease models, and biological specimens.
- Develop computational tools and infrastructure for storage, integration, and analysis of large-scale biological and other patient-relevant data.
- Build new multidisciplinary translational teams and create virtual and real spaces where these teams can operate.
- Support and enable open science.
- Change academic, publishing, and funding incentives to promote collaborative, transparent, and reproducible research.
- Engage patients, caregivers and citizens as direct partners in research.
RFA-AG-17-061 / RFA-AG-18-029: Interdisciplinary Research to Understand the Complex Biology of Resilience to Alzheimer’s Disease Risk (R01)

- Gain deeper understanding of the molecular mechanisms by which gene-environment interactions lead to cognitively resilient phenotypes, through integrative network analysis of multi-omic data collected from individuals resilient to various types of AD risk*

- Identify and experimentally validate molecular drivers of cognitive resilience that may serve as novel therapeutic targets for AD prevention.

*HIGH AD RISK: E4 homozygous, Down Syndrome individuals, FAD mutation carriers, very old age (90+, centenarians), presence of pathologic lesions (amyloid, tau).
## RESILIENCE-AD Program: Learning from the outliers to identify new targets for AD prevention

<table>
<thead>
<tr>
<th>R56</th>
<th>AG061837-01</th>
<th>LEE, JOSEPH HYUNGWOO (contact); KRINSKY-MCHALE, SHARON J</th>
<th>Identification of protective factors for cognitive resilience in adults with Down Syndrome: A multi-omic study</th>
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<tbody>
<tr>
<td>R01</td>
<td>AG057907-03</td>
<td>ZHANG, BIN (contact); EHRlich, Michelle E; HARoutUNIAN, VAHRAM</td>
<td>Integrative Network Modeling of Cognitive Resilience to Alzheimer’s Disease</td>
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<td>R01</td>
<td>AG057909-04</td>
<td>BARZILAI, NIR J (contact); ZHANG, ZHENGDONE D</td>
<td>Resilience to Alzheimer’s disease in humans with exceptional longevity</td>
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<td>R01</td>
<td>AG057911-03</td>
<td>GAITERI, CHRISTOPHER A</td>
<td>Identifying the molecular systems, networks, and key molecules that underlie cognitive resilience</td>
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<td>R01</td>
<td>AG057912-03</td>
<td>LEVINE, MORGAN ELYSE (contact); HORVATH, STEVE</td>
<td>Molecular Networks Underlying Resilience to Alzheimer’s Disease Among APOE E4 Carriers</td>
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<tr>
<td>R01</td>
<td>AG057914-03</td>
<td>KACZOROWSKI, CATHERINE COOK</td>
<td>Systems Genetics Analysis of Resilience to Alzheimer’s disease</td>
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<td>R01</td>
<td>AG057915-03</td>
<td>BENDALL, SEAN CURTIS (contact); ANGELO, ROBERT MICHAEL; MONTINE, THOMAS J</td>
<td>MIRIAD - Multiplexed Imaging of Resilience In Alzheimer’s Disease</td>
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<td>R01</td>
<td>AG061796-02</td>
<td>ERTEKIN-TANER, NILUFER</td>
<td>Harnessing Molecular Networks of Resilience for Therapeutic Discoveries in AD</td>
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<td>R01</td>
<td>AG061798-02</td>
<td>GAITERI, CHRISTOPHER A</td>
<td>Identifying the origins of resilience through human single cell molecular networks, then testing them in diverse, resilient, human IPS lines</td>
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<tr>
<td>R01</td>
<td>AG061800-02</td>
<td>HERSKOWITZ, JEREMY HARTFORD (contact); GAITERI, CHRISTOPHER A; SEYFRIED, NICHOLAS THOMAS</td>
<td>Identifying therapeutic targets that confer synaptic resilience to Alzheimer’s disease</td>
</tr>
</tbody>
</table>
Harnessing the Power of Big Data and Open Science to Understand the Complex Biology of Disease Risk and Resilience and Discover New Therapeutic Targets and Biomarkers

Genomic, proteomic, metabolomic data from human brain and peripheral fluid

Computational modeling/network biology

Experimental validation in cell-based and animal models

Drug Discovery

AMP-AD
Target Discovery

AD Knowledge Portal
M²OVE-AD

Agora

Psych-AD
Resilience-AD

M²OVE-AD – Molecular Mechanisms of the Vascular Etiology of AD
Psych-AD - Molecular Mechanisms of the Neuropsychiatric Symptoms in AD
Data
Raw and processed versions of AD Consortia data
open or restricted access based on data type/data source
human, cell-based, animal model studies

Algorithms
e.g., RNAseq processing, proteomic analysis, single cell RNA

Analytical results
e.g., eQTL, networks, diff expn

Insights
e.g., targets

AD Knowledge Portal – Data, Research tools, Collaborators

17,053 biosamples | 15 genomic data types | 7,261 human donors

https://adknowledgeportal.synapse.org
Accessing Data From Individual Studies

**The AD-BXD Study**

**Jax**

C57BL/6J mice hemizygous for the dominant 5XFAD transgene were bred with genetically diverse recombinant inbred strains from the BXD genetic reference panel. The F1 progeny each harbor one maternally derived B allele and either a B or D paternally derived allele at any given genomic locus.

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<th>Data Types</th>
<th>Behavior Process, Gene Expression, Immunoassay, Metadata</th>
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<td>Tissue</td>
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<td>Species</td>
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<td>Program</td>
<td>Resilience-AD</td>
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<tr>
<td>Grant</td>
<td>R01AG057914</td>
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**STUDY DESCRIPTION**

The AD-BXD study

In this study, the authors develop and characterize the first genetically diverse mouse model of aging and Alzheimer’s disease. Female congenic C57BL/6J mice hemizygous for the dominant 5XFAD transgene (Oakley et al., 2006), which consists of 5 human mutations known to cause familial AD (three in amyloid precursor protein (APP; Swedish: K670N, M671L, Florida: I716V, and London: V717I) and two in presenilin 1 (PSEN1; M146L and L286V), were obtained from The Jackson Laboratory [JAX MMRR Stock No: 34848-JAX]. These mice were bred with 28 males from a set of genetically diverse recombinant inbred strains from the well-established BXD genetic reference panel (Peirce et al., 2004). The F1 progeny resulting from this B6-5XFAD by BXD cross are isogenic recombinant inbred backcross mice, each harboring one maternally derived B allele and either a B or D paternally derived allele at any given genomic locus. As expected from a Mendelian pattern of inheritance, approximately 50% of these F1 mice carry the 5XFAD transgene (termed AD-BXD) and approximately 50% are non-transgenic (Ntg) littermate controls referred to Ntg-BXD. All mouse experiments occurred at University of Tennessee Health...
Accessing Data Across Studies

Data Type: geneExpression
20699 data files

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<th>behavior process (3787)</th>
<th>analysis (2257)</th>
<th>electrophysiology (2110)</th>
<th>genomicVariants (1353)</th>
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<td>metabolomics (126)</td>
<td>image (109)</td>
<td>tool (53)</td>
<td>unannotated (44)</td>
<td>clinical (43)</td>
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<td>chromatinActivity (2)</td>
<td>geneExpression,genomicVariants,chromatinActivity (1)</td>
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Showing 43648 data files

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<td>geneExpression</td>
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<td>middle temporal gyrus</td>
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</tbody>
</table>
Accessing Tools - Computational

**MEGENA Multiscale Clustering of Geometrical Network**

*Software package*

Co-Expression Network Analysis by adopting network embedding technique.

**Contributor:** Won-Min Song, Bin Zhang

**Program:** AMP-AD

**Documentation:** [https://doi.org/10.1371/journal.pcbi.1004574](https://doi.org/10.1371/journal.pcbi.1004574)
Accessing Tools - Experimental

Displaying 35 Experimental Tools by Reagent Type

- Mouse Models (35)
- Viral Vectors (1)
- Drosophila Models (1)
- Gene Expression Panels (1)

TOOL

**5XFAD Mouse Model**

*Mouse Models*

5XFAD transgenic mice overexpress both mutant human APP(695) with the Swedish (K670N, M671L), Florida (I716V), and London (V717I) Familial Alzheimer’s Disease (FAD) mutations and human PS1 harboring two FAD mutations, M146L and L286V. Expression of both transgenes is regulated by neuronal-specific elements of the mouse Thy1 promoter to drive overexpression in the brain. These 5XFAD transgenic mice rapidly ...Show More

| DIAGNOSIS | Familial AD |
| MODEL TYPE | APP Models, PS1 Models |
| MODEL NAME | 5XFAD |

https://adknowledgeportal.synapse.org
Accessing - People

Institution: Mayo Clinic
12 people

Displaying 12 people

- Gaojun Bu
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  bu@gynpyscale.org

- Mariet Allen
  Assistant Professor of Neuroscience / Mayo Clinic
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- N. Zhao
  zhaonai@synapse.org

- Steven Younkin
  StevenYounkin@synapse.org

- Joseph S. Reddy
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  jsreddy@synapse.org

- Minerva Carrasquillo
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  mcarrasquillo@synapse.org

- Nilafer Ergen-Taner
  Mayo Clinic Florists
  net04@synapse.org

- Takahisa Kanekiya
  Mayo Clinic
  Tak@synapse.org
Agora: Sharing Analytical Results and Insights

Open-source platform providing curated, AMP-AD verified, systems biology analyses for any gene of interest.

Enables researchers at large to discover and evaluate the evidence behind the AMP-AD nominated targets as well as to nominate new targets.

542 unique targets currently available, derived from unbiased, computational analyses of high-dimensional human omic data.

https://agora.ampadportal.org/
Agora Targets – Systems Biology Evidence

VGF
VGF nerve growth factor inducible

NOMINATION DETAILS  SUMMARY  EVIDENCE  DRUGGABILITY

RNA

Protein

Metabolites

Druggability

Small Molecule Modality  13  Unknown: There is no information on ligands or structure in any of the categories above.

Antibody Modality  1  Secreted protein. Highly accessible to antibody-based therapies.

Safety  4  Probable safety risks requiring mitigation. More than two of: High-off target gene expression, cancer driver, essential gene, associated deleterious genetic disorder, HIPPO phenotype associated gene, or black box warning on clinically used drug.
NIA Resources to Support Resilience Related Research

Dana Plude, PhD
Division of Behavioral and Social Research
NIA
dana.plude@nih.gov

RCCN Webinar
April 30, 2020
OUTLINE

• Funding Opportunities

• Other Resources

• Opportunities to Shape Resilience Research
Funding Opportunities

• Funding Opportunity Announcements (FOAs)
  • [PAR-16-326](#) Advancing Basic Behavioral and Social Research on Resilience: An Integrative Science Approach (UG3/UH3) - EXPIRED
  • [RFA-AG-18-029](#) Interdisciplinary Research to Understand the Complex Biology of Resilience to Alzheimer’s Disease Risk (R01) - EXPIRED
  • [PA-19-055](#) (R01 Parent R01 Clinical Trial Required)
  • [PA-19-056](#) (R01 Parent R01 Clinical Trial Not Allowed)
  • [PA-19-091](#) (R01 Basic Experimental Studies with Humans Required)

• Notices of Special Interest (NOSIs)
  • Extramural Nexus – NOSIs express areas of focal interest to Institutes
  • More expedient than FOAs
  • NOSI ‘points’ to FOA – enter NOSI number in field 4B of SF424 application
Funding Opportunities

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  - [PAR-16-326](#) Advancing Basic Behavioral and Social Research on Resilience: An Integrative Science Approach (UG3/UH3) - **EXPIRED**
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# NIA Funding Opportunities

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<thead>
<tr>
<th>Funding Opportunity Title</th>
<th>Number</th>
<th>Open/Close</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New/Unconventional Animal Models of Alzheimer’s Disease (R24 Clinical Trial Not Allowed)</strong></td>
<td>RFA-AG-21-003</td>
<td>1/13/2020-10/8/2020</td>
<td>Infrastructure</td>
</tr>
<tr>
<td><strong>Notice of Special Interest: Digital Technology for Early Detection of Alzheimer’s Disease and Related Dementias</strong></td>
<td>NOT-AG-20-017</td>
<td>3/11/2020-11/13/2021</td>
<td>Biomarkers/Diagnosis</td>
</tr>
</tbody>
</table>
NOSI Connection to FOA

**Notice Number**
Notice to Specify High-Priority Research Topic for PAR-19-070 and PAR-19-071

**Notice Number:** NOT-AG-18-053

**Key Dates**
**Release Date:** December 17, 2018

**Related Announcements**
PAR-19-070
PAR-19-071

**Issued by**
National Institute on Aging (NIA)

**Purpose**
This Notice of Information specifies a high-priority topic of interest for PAR-19-070 “Research on Current Topics in Alzheimer's Disease and Its Related Dementias (R01 Clinical Trial Optional)” and PAR-19-071 “Research on Current Topics in Alzheimer’s Disease and Its Related Dementias (R21 Clinical Trial Not Allowed)”. 

**FOA Number**
Other Funding Opportunities

- Career Development & Training Awards
  - K’s, F’s, T’s

- Administrative Supplements
  - PA-18-591 - Administrative Supplements to Existing NIH Grants and Cooperative Agreements
  - PA-18-906 - Research Supplements to Promote Diversity in Health-Related Research
Other Resources

• Research Networks
  • Reversibility Network – seed funding
  • Interdisciplinary Network on Rural Population Health and Aging – pilot funding
  • Stress Measurement Network - consultations

• Research Centers
  • Alzheimer's Disease Centers
  • Claude D. Pepper Older Americans Independence Centers (OAICs)
  • Nathan Shock Centers of Excellence in the Basic Biology of Aging
  • Resource Centers for Minority Aging Research (RCMARs)
  • Edward R. Roybal Centers for Translation Research in the Behavioral and Social Sciences of Aging
  • Centers on the Demography and Economics of Aging

• Research Centers Collaborative Network (RCCN)
  • Pilot study funding tied to individual workshops
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Opportunities to Shape Resilience Research

- **STARRRS** Longitudinal Rat Resource – NIA Intra/Extramural Program
  - [NOT-AG-19-017](#) – Request for Information

- **Collaboratory on Research Definitions** – Resilience & Reserve
  - [Call for Pilot Projects](#) – due date June 15, 2020
  - Workshop #2 slated for Sept 14-15, 2020

- **RCCN Workshops**
  - Resilience & Reserve in Aging – Nov 12-13 2019
  - Resilience Webinar # 2 – tba (June?)
Thank you
Q&A
Coming Soon!
Webinar on Resilience and Reserve: Biology of Aging and Translational Research

Date TBA
(Join the RCCN mailing list or follow @rccnaging on Twitter for updates)
THANK YOU for joining us & for completing our brief SURVEY.

(Survey will appear when you exit the webinar.)