LIVE LONGER, LIVE WELL.

afar american federation for aging research

2024 ANNUAL REPORT

DEDICATION

AFAR dedicates its 2024 Annual Report to the late Diane Nixon. A close associate of founder Irving S. Wright, MD, Ms. Nixon was an early and ongoing champion of aging research and AFAR. She served as an active member of AFAR's Board of Directors and as Vice Chair from 1989 to 2011, and she was elected Vice Chair Emerita in 2012. For more than thirty years, she was instrumental in raising funds and awareness for AFAR's mission, a commitment that continued long after her official terms on our Board. Through the Deeds Foundation, founded with her mother, she helped direct philanthropy to the arts, education, and medicine. We are immensely grateful for her decades of dedication and generosity to AFAR.

PROMOTING RIGOROUS RESEARCH THROUGH PARTNERSHIPS

AFAR remains passionately and proactively committed to supporting rigorous research that will lead to therapeutics and interventions that will help us all live healthier, longer.

Our core values are rooted in the belief that science is essential, and we believe that aging research is poised more than ever to transform both personal and public health.

Our core grant programs are funded through partnerships with foundations, corporations, and individuals, and we are extremely grateful for this support.

In this report, we highlight four talented investigators whose research has been funded through AFAR's grant collaborations with four foundations. These partnerships help foster new research approaches, meet gaps in field, and find and fund investigators at critical, early moments in the research path.

The AFAR grantees featured here demonstrate geroscience — they are exploring how the biological processes of aging drive biology of age-related conditions and concerns like memory, cancer, metabolism, and organ disfunction. They are applying novel approaches or technologies to their research approach, and each has an eye toward clinical translation.

This report also highlights all grantees awarded in 2024 and the accomplishments of our initiatives, including the three programs funded by the National Institute on Aging (NIA) led by AFAR. But the impact of this work goes much further.

Multi-year and interdisciplinary in scope, these AFAR-supported projects and programs will influence the field and beyond through publications, data, and networks. Future generations of both scientists and consumers, and practitioners and patients alike, will benefit from the work started here through your support.

AFAR has not done this alone, and we value our partnerships at every level. Thank you for believing in the promise of healthy aging through the path of research and thank you for supporting AFAR and our scientific community.

Stephanie Lederman, Executive Director

A GUT FEELING FOR HEALTHY AGING

Ömer Yilmaz, MD, PhD

Within a week's time, the entire intestinal lining renews itself. That amounts to about 20 pounds of new you every year.

"Intestinal epithelium is probably the fastest regenerating tissue in the body," says **Ömer Yilmaz, MD, PhD,** a two-time AFAR grantee. "We know that the biology of aging is associated with reduced function in many tissues, and this also holds true in the intestine."

As the Director of the MIT Stem Cell Initiative and an Associate Professor of Biology at MIT's Koch Institute for Integrative Cancer Research, as well as a gastrointestinal pathologist at the Beth Israel Deaconess Medical Center, Massachusetts General Hospital, and Harvard Medical School, Yilmaz combines his scientific curiosity about the biology of aging with an eye on the potential clinical significance and application.

This focus on both basic and translational research has been bolstered with support from both an early career **Glenn Foundation for Medical Research and AFAR Grant for Junior Faculty** in 2015 and, later, the **Glenn Foundation for Medical Research Breakthroughs in Gerontology (BIG) Award** from AFAR in 2022.

For the last decade, he has been focusing much of his research on stem cells — cells that have not yet differentiated into a final specialized cellular form, like a neuron in the brain or insulin-secreting cell in the pancreas. In the intestine, stem cells bear the heavy responsibility of maintaining an organ by which human beings manage to extract from food the pantry of nutrients the body needs to do everything the body has to do.

Intestinal stem cells (ISCs) have two primary fates. One is to give rise to more stem cells. That's the pathway that continually sets the stage for tissue and organ renewal. The other pathway for ISCs is to differentiate into the specific players on that stage — the intestine's various specialized cell types, among them ones that provide structure and ones that secrete growth factors and other signaling molecules. It's a complex dynamic that changes with age, diet, and environmental conditions.

A research strategy for Yilmaz has been to compare how ISCs and other cell types in their surrounding niche respond to different nutrients and physiological conditions, and how diet influences the risk of colon cancer. One set of his studies in mice unearthed the sobering finding that the previously observed regenerative and otherwise health-promoting benefits that fasting can bestow on intestinal tissue has a double-edge.

He notes: "We asked a simple question: what is it about fasting and post-refeeding that drive regeneration?" On the upside, post-fast refeeding (breaking the fast) activates anabolic, or tissue-building processes, which are driven by stem cells. But in the post-fast refeeding phase in animal studies, Yilmaz and his lab have found there can be a downside: "If during that refeeding period when stem cells are more active, and you happen to get exposed to a carcinogen, it can increase the risk of developing an early cancer."

This means that boosting regeneration too much or in the wrong way could actually accelerate cancer and other disease processes. It's the kind of research finding that could provide guidance in the design of fasting-based, cancer-risk-reduction protocols for increasing people's healthspan.

"We want to understand ways to capture the upside of dietary interventions like fasting while minimizing the downside. There's so much diversity in nutrients, and so many different cell types and different interactions, that we've only scratched the surface."

GLENN FOUNDATION
FOR MEDICAL RESEARCH

AFAR is grateful to the Glenn Foundation for Medical Research for its support of Dr. Yilmez' research through these grant programs.

SEEKING AGING'S SIGNATURE IN CELLS

Aditi U. Gurkar, PhD

When **Aditi U. Gurkar, PhD,** was a child, she could not help but notice how much older her frail and reticent grandmother seemed compared to her spry and active grandfather, even though they were the same age. It was a family reality that sparked a question she continues to pursue to this day: Why do people age differently?

Now an Assistant Professor of Geriatric Medicine at the University of Pittsburgh School of Medicine, Gurkar has made it her mission to distinguish molecular and cellular signatures in peoples' bodies that she hopes will enable doctors to identify "healthy agers" like her grandfather from "rapid agers" like her grandmother. At the same time, she is hoping the biological signatures she is uncovering will point toward practical lifestyle and medical interventions that could help everyone extend their healthspans — the portion of their lives when they are free of life-hampering illness or disease.

Gurkar was among the inaugural recipients of the **Hevolution/AFAR New Investigator Award in Aging Biology and Geroscience Research** in 2022. The award has allowed her to enhance her research in the biology of aging by collaborating with colleagues in physics at the university. "The Hevolution/AFAR grant that I have now has been such a powerful catalyst for both my personal and professional growth. Especially for researchers like me, who love to think outside the box and collaborate with new people, this kind of support really is a catalyst to develop new ideas in the field."

Gurkar has been focusing on a class of cells, called senescent cells, that shut down their normal functions but do not die. Instead, they persist zombie-like in brain, kidney, fat, and other tissues. There, these troublesome cells secrete cocktails of inflammatory, protein-damaging, and other health-challenging substances collectively known as the senescence-associated secretary phenotype (SASP).

Among the most ambitious and novel approaches to her research, Gurkar has been hunting for measurable differences in the blood composition between healthy and rapid agers who, like her grandparents, share the same chronological age but whose biological age can differ dramatically.

By measuring SASP molecules and metabolism-related molecules (the metabalome) in samples from the two types of agers, her team developed the Health Aging Metabolic (HAM) index and already has identified — with the help of machine learning tools that can spot otherwise hidden patterns in complex data sets — candidate signatures for healthy or rapid aging.

The data Gurkar's team has gathered hint of interventions. Their machine-learning analysis pointed to several metabolites that could be drivers of biological aging, including beta-cryptoxanthin, a beneficial compound that is more abundant in the blood of healthy agers. This suggests that for some people a simple action like eating more food rich in beta-cryptoxanthin, such as tangerines, peppers, and pumpkin, could contribute to a longer healthspan.

With the support of her Hevolution/AFAR grant, she is also developing a new way of detecting senescent cells using ultra-tiny magnetic particles made of the iron oxide mineral maghemite modified with varying amounts of cobalt. The tack here is to see if senescent cells have a holistic character, based on factors like their size, iron content, and aggregation of cellular components like mitochondria that is reflected in lab-detectable changes in magnetic nanoparticles that diagnosticians would be able to place inside cells.

"You can basically detect a magnetic signature for a cell and so this could become a new way to detect senescent cells. It's high-risk, 'out-of-the-box' research, but the potential payoffs could substantial."

HEVOLUTION

AFAR is grateful to Hevolution Foundation for its support of Dr. Gurkar's research through this grant program.

A RESCUE MISSION TO THE SYNAPSES

Tara Tracy, PhD

Neuroscientist **Tara Tracy, PhD,** realized very early in life how important the brain is to our bodies and our lives. As a child, she lost her father to a brain tumor. Decades later, this early tragedy has inspired her research path.

Today, as an Assistant Professor at the Buck Institute for Research on Aging, Tracy has her sights on getting to the complex, neurobiological core of Alzheimer's disease and other forms of dementia. With the support of AFAR's **McKnight Brain Research Foundation Innovator Award in Cognitive Aging and Memory Loss,** awarded in 2022, she is helping advance our understanding of "normal" brain aging and cognitive changes.

Tracy's research team has been homing in on the vast, diaphanous, and always re-forming nexus of connections among brain cells. It's in these dynamic synaptic networks where cognitive and emotional life — rich in memories, learning, joy, and sorrow — reside. It's also here where insidious molecular and cellular mechanisms can wreck the integrity of synapses, including the memory-maintaining ability of these portals of cell-to-cell communications to change over time.

In recent years, the Tracy lab has been probing the role of KIBRA, a protein named for its presence in the brain, in synaptic health. It's been long known to be important in memory. More specifically, it helps strengthen synaptic signals between cells as new memories are forged and maintained.

"We found that in Alzheimer's disease and some other dementias KIBRA is reduced. We wondered if by reintroducing KIBRA function we could reverse the synaptic-plasticity impairment," she says. If so, this could open a way to counter the effects of dementia regardless of what the underlying, biological mechanisms of these pathologies might be.

Because faulty synapse function underlies the effects of several dementias, the approach stands a chance of having applications beyond just Alzheimer's disease.

Tracy and her lab are working on a potential KIBRA-based therapeutic for synapse repair. "At the end of the day what I think really matters is the function of the neurons that are encoding memory and responsible for cognition."

Her AFAR/McKnight Award allowed her to expand this research. Rather than focusing only on KIBRA's role in memory loss due to disease, she was empowered to also look at how it might play into memory loss that is commonly experienced during healthy aging.

Using mice genetically engineered to have far less KIBRA compared to control mice, Tracy's team found that only older mice, and not young animals, with less KIBRA showed memory loss compared with normal cohorts.

This result raises a question worthy of pursuing: "Are people who may have less KIBRA to start with more prone to having age-related memory decline?" Other findings point toward KIBRA's role in the general aging process beyond its role in synapse function in dementia pathologies.

"Some people are resilient to diseases related to memory loss, and some people aren't," she notes. Uncovering specific biological differences between these groups, as well as environmental triggers that could be factors, are crucial research goals in this context. "We should be studying this hardcore, because this is a key to helping people stay healthier longer in their lives."

McKNIGHT BRAIN RESEARCH FOUNDATION
Preserving memory, enhancing life

AFAR is grateful to the McKnight Brain Research Foundation for its support of Dr. Tracy's research through this grant program.

UNVEILING AGING'S HIDDEN ROOTS

Oscar Vivas, PhD

The last name of **Oscar Vivas, PhD,** translates to "you live" in English. That could not be more apropos for the Colombian-born scientist who has devoted his research to understanding how human nervous systems deteriorate with age.

In the departments of Pharmacology and Neurobiology and Biophysics at the University of Washington, where he is an Assistant Professor, Vivas is uniquely focused on the body-wide extension of the nervous system. This involuntarily controls a huge range of what it means to live — from the beating of your heart, to the digestive undulations of your intestines, to the multi-faceted internal adjustments that kick in when you just have to flee the scene or put up a good fight.

"We are commonly more aware of the brain controlling voluntary movements like with our hands, but there is an autonomic system that controls the involuntary movement in our organs."

With the support of a **Sagol Network GerOmic Award for Junior Faculty** from AFAR in 2020, he's been diving deep into the autonomic nervous system, all of the way to the thousands of tiny, gate-like potassium-ion channels on so-called sympathetic motor neurons that help set the trigger points for when these cells fire or not.

"My hope is that by studying the dysfunction of this potassium channel system, we can find commonalities in the process of aging in the entire body."

In research on a part of the autonomic system in mice of different ages, Vivas discovered that in old animals these ion channels, which are made of protein molecules, become less able to convey potassium ions across the cell membrane. That's a functional downgrade that causes neurons to be hyperexcitable.

"When the neurons fire more, they release more norepinephrine, which activates the organs to do something, so we expect that excess norepinephrine will make the organs dysfunctional."

The goal of understanding and controlling that potentially common mechanism for many aspects of declining health during aging drives much of Vivas's work. One focus of the research is to uncover what during aging causes specific molecular and functional changes in the ion-channel proteins that reside in the neurons' membranes. "A second goal is to be able to reverse that dysfunction with a healthspan-extending intervention: Can we find a molecule to target that channel to improve its function?"

The potassium channel protein provides only one of many possible intervention points. The plasma membrane is crowded with molecules, not only ion channels, but with receptors and other proteins and enzymes. What's more, they are all embedded in a sea of fatty lipid molecules in the cell membrane where these components move like tiny rafts and interact with one other in many ways. All of this can matter when it comes to understanding how neuronal behavior changes with age and how to control it by tweaking the ion channels or membrane components.

As one of the inaugural recipients of this specialized grant focusing on -Omics, Vivas is on the forefront of applying biological approaches, such as genomics or proteomics, that efficiently generate data about many genes or proteins, instead of one gene or one protein.

"This award enables us to be like detectives, because with -Omics approaches we can cast a broad fishnet to catch many molecular targets, and from there start narrowing down to find molecules involved in mechanisms of aging."

THE SAGOL NETWORK

AFAR is grateful to The Sagol Network for its support of Dr. Vivas' research through this grant program.

AFAR GRANT PROGRAMS

AFAR's grants portfolio supplies the pipeline of researchers working to understand the basic biology of aging and age-related diseases in order to extend our years of health and decrease periods of sickness.

Several of our grant programs are designed to help early career scientists acquire the knowledge, skills, and experience needed to obtain larger grants as they build a body of research. Other grants are tailored to mid-career and senior investigators, which allow them to enter the field of aging or remain focused and expand their research programs.

AFAR's 2024 grants portfolio included (in order of appearance on the following pages):

- AFAR Grants for Junior Faculty and Glenn Foundation for Medical Research Grants for Junior Faculty
- Glenn Foundation for Medical Research Discovery Awards
- Glenn Foundation for Medical Research Postdoctoral Fellowships in Aging Research
- McKnight Brain Research Foundation Innovator Awards in Cognitive Aging and Memory Loss
- Sagol Network GerOmic Award for Junior Faculty
- Diana Jacobs Kalman/AFAR Scholarships for Research in the Biology of Aging

Through these programs, AFAR provided $5,516,000 to 42 investigators in 2024.

Additionally, AFAR encourages graduate students to pursue aging research or aging-related career paths through the Clarence Pearson Fellowship in Public Health and Aging.

Learn more about AFAR's grants program at www.afar.org/funding-opportunities

SCIENTIFIC REVIEW PROCESS

AFAR's rigorous grant reviews help ensure that the most promising scientific ideas and investigators receive our support. Members of our Scientific Review Committees are accomplished scientists who represent a wide range of expertise in biomedical research on aging. Many are also past AFAR grantees, and they play an important role in identifying the talent and research that AFAR supports.

Each year, they volunteer their time and expertise to review hundreds of applications to recommend research projects that have the greatest likelihood of making significant contributions to help us stay healthier longer as we grow older.

2024 Review Committees are listed on the following pages. Additionally, AFAR's National Scientific Advisory Council (NSAC) members lend their scientific expertise to our grant review process; many members of the NSAC participate in the Letter of Intent phase of grant submission as well as the final review panels. AFAR is grateful for our reviewers' contributions, which are essential to the success of our grant programs.

For a complete list of 2024 reviewers, visit www.afar.org/scientific-committees

AFAR GRANTS FOR JUNIOR FACULTY
GLENN FOUNDATION FOR MEDICAL RESEARCH GRANTS FOR JUNIOR FACULTY

This program provides up to $150,000 for a one- to two-year award to junior faculty (MDs and PhDs) to conduct research that will serve as the basis for longer term research efforts on the biology of aging. The major goal of this program is to assist in the development of the careers of junior investigators committed to pursuing careers in aging research.

Priya Balasubramanian, BVSc, PhD*
Assistant Professor
University of Oklahoma
Health Sciences Center

Lacy Barton, PhD
Assistant Professor
The University of Texas at San Antonio

Aidan Gilchrist, PhD***
Assistant Professor
University of California, Davis

Longhua Guo, PhD***
Assistant Professor
University of Michigan

Changyang Linghu, PhD***
Assistant Professor
University of Michigan

Yang Lyu, PhD
Assistant Professor
Rutgers University

Jonathan Nelson, PhD**
Assistant Professor
Stony Brook University

Alison E. Ringel, PhD
Assistant Professor
Ragon Institute of Mass General,
MIT, and Harvard

Carlos Giovanni Silva-García, PhD
Assistant Professor
Brown University

Ayshwarya Subramanian, PhD***
Assistant Professor
Cornell University

Daniel Tyrrell, PhD
Assistant Professor
University of Alabama at Birmingham

SELECTION COMMITTEE

Catherine Kaczorowski, PhD, *Chair*
University of Michigan

Bérénice A. Benayoun, PhD
University of Southern California

Anthony J.A. Molina, PhD
University of California, San Diego

Birgit Schilling, PhD
Buck Institute for Research on Aging

Vittorio Sebastiano, PhD
Stanford University

Alexander Soukas, MD, PhD
Mass General Hospital/
Harvard Medical School

** Underwritten fully by the WoodNext Foundation, a component fund administered by Greater Houston Community Foundation*

*** Underwritten fully by the Hearst Foundations *** Glenn Foundation for Medical Research Grants for Junior Faculty*

Other funders of the Grants for Junior Faculty include: AFAR Board of Directors, Anonymous, Diane Nixon, Diana Jacobs Kalman, Rose M. Badgeley Charitable Trust, The Irene Diamond Fund, The Lowell F. Johnson Foundation, and The Irving S. Wright Endowment

"AFAR has an undeniable track record of supporting junior investigators who emerge as leaders in the aging research field. AFAR's rigorous review process has set the standard in the field and earned the trust and admiration of our funding partners. AFAR's post-award management also ensures that these dedicated researchers are supported and connected through our convenings and community. The success of our grantees and the impact they have on the field are great sources of pride for AFAR."

- Thomas A. Rando, MD, PhD, President

GLENN FOUNDATION FOR MEDICAL RESEARCH DISCOVERY AWARDS

These awards were created to support research projects with strong potential to develop pioneering discoveries to understand the underlying biological mechanisms that govern normal human aging and its related physiological decline.

Jeffrey Friedman, MD, PhD
Professor, The Rockefeller University & Investigator, Howard Hughes Medical Institute

Myriam Heiman, PhD
Associate Professor of Neuroscience, Massachusetts Institute of Technology

SELECTION COMMITTEE

Darren Baker, PhD, *Chair*
Mayo Clinic

Dena Dubal, MD, PhD
University of California, San Francisco

Heinrich Jasper, PhD
Genentech, Inc.

Janko Nikolich, MD, PhD
University of Arizona College of Medicine

Charlotte Peterson, PhD
University of Kentucky

GLENN FOUNDATION FOR MEDICAL RESEARCH POSTDOCTORAL FELLOWSHIPS IN AGING RESEARCH

This program provides support for postdoctoral fellows (MD, MD/PhD, and PhD) who specifically direct their research toward basic aging mechanisms and/or translational findings that have direct benefits to human aging and healthspan.

Amanat Ali, Pharm-D, PhD
Albert Einstein College of Medicine

Lena Batoon, PhD
Mayo Clinic

Walker Hoolehan, PhD
Oklahoma Medical Research Foundation

Xiaolin 'Lindsay' Huang, PhD
University of California, Berkeley

Ryan Marshall, PhD
University of Wisconsin-Madison

Ethan A. Perets, PhD
UT Southwestern Medical Center

Andrea Francesca M. Salvador, PhD
Stanford University

Omer Sharon, PhD
University of California, Berkeley

Lilian Silva, PhD
Saint Louis University

Hongyang Xu, PhD
Oklahoma Medical Research Foundation

Yanxin Xu, PhD
Massachusetts General Hospital

Yifei Zhou, PhD
Massachusetts General Hospital and Harvard Medical School

SELECTION COMMITTEE

Ashley Webb, PhD, *Chair*
Buck Institute for Research on Aging

Hua Bai, PhD
Iowa State University

Jennifer Garrison, PhD
Buck Institute for Research on Aging

Scott Leiser, PhD
University of Michigan Medical School

Marissa Schafer, PhD
Mayo Clinic

Marc Vermulst, PhD
University of Southern California

AFAR is grateful to the Glenn Foundation for Medical Research for its support of these grant programs.

Read Spotlight Interviews with many of our grantees at www.afar.org/grantee-spotlight-interviews-2024

"I am honored to serve as Chair of the McKnight Brain Research Foundation Innovator Awards in Cognitive Aging and Memory Loss program, one of AFAR's scientific review committees. My fellow committee members and I have been extremely pleased to see a consistent increase in the number of high-quality applications. It is a challenge for us to select candidates from such a highly competitive pool, but it reflects the growing interest in research on aging and the high caliber of promising research that AFAR supports. As an AFAR board member, I am inspired by, and grateful for, AFAR's long-standing commitment to finding and funding early career talent. And as a former AFAR early-career grantee myself, I know firsthand the far-reaching impact this makes not just on one's scientific path, but for the field's collective knowledge and innovative collaborations."

- Ana Maria Cuervo, MD, PhD

MCKNIGHT BRAIN RESEARCH FOUNDATION INNOVATOR AWARDS IN COGNITIVE AGING AND MEMORY LOSS

The major goal of the program is to identify emerging scientific leaders by building a cadre of outstanding research scientists across the United States to lead transformative research in the field of cognitive aging. The program targets full-time independent investigators at the rank of Assistant Professor or Associate Professor (or equivalent). One award is made to support innovative studies focusing on clinical translational research, and another supports innovative studies of basic biological mechanisms underlying cognitive aging and age-related memory loss.

Janine Kwapis, PhD
Assistant Professor
Pennsylvania State University

Sanaz Sedaghat, PhD
Assistant Professor
University of Minnesota

SELECTION COMMITTEE

Ana Maria Cuervo, MD, PhD, *Chair*
Albert Einstein College of Medicine

Rozalyn Anderson, PhD
University of Wisconsin School of Medicine and Public Health

Patricia Boyle, PhD
Rush University and the McKnight Brain Research Foundation

Rafael de Cabo, PhD
National Institute on Aging, NIH

Roy H. Hamilton, MD, MS
University of Pennsylvania Perelman School of Medicine and The McKnight Brain Research Foundation

Madhav Thambisetty, MD, PhD
The McKnight Brain Research Foundation

AFAR is grateful to the McKnight Brain Research Foundation for its support of this grant program.

SAGOL NETWORK GEROMIC AWARD FOR JUNIOR FACULTY

The major goal of this program is to assist in the development of the careers of junior investigators committed to pursuing careers in the field of aging research and geromics, in particlar –Omics research focused on aging and/or age-related disease research.

Amy Vandiver, MD, PhD
Clinical Instructor Clinician-Investigator Track, University of California, Los Angeles

The Grants for Junior Faculty Selection Committee reviews Sagol Award applications.

AFAR is grateful to the Sagol Network for its support of this grant program.

DIANA JACOBS KALMAN/AFAR SCHOLARSHIPS FOR RESEARCH IN THE BIOLOGY OF AGING

This program is designed to give students enrolled in MD, DO, PhD, or combined-degree programs the opportunity to conduct a three-to-six-month research project focused on biomedical research in aging.

Yeeun Bae
Virginia Tech

Ruth Barros De Paula
Baylor College

Andreia Cadar
UConn Health

Alexander Lasher
University of Alabama at Birmingham

Keionna Netwo
University of California, Los Angeles

Wynnie Nguyen
University of Southern California

Cynthia Siebrand
Buck Institute/
University of Southern California

Yifei Wang
University of California, Berkeley

Sabrina Zequeira
University of Florida

Zehao Zhang
The Rockefeller University

SELECTION COMMITTEE

Anna Csiszar, MD, PhD, *Chair*
The University of Oklahoma
Health Sciences Center

Nathan Basisty, PhD
National Institute on Aging, NIH

Constanza J. Cortes Rodriguez, PhD
University of Southern California

Christina E. Hugenschmidt, PhD
Wake Forest School of Medicine

Allyson K. Palmer, MD, PhD
Mayo Clinic

Jason Roh, MD, MHS
Harvard Medical School

Michael Stout, PhD
The University of Oklahoma

AFAR is grateful to Diana Jacobs Kalman for her support of this grant program.

CLARENCE PEARSON FELLOWSHIP IN PUBLIC HEALTH AND AGING

The Clarence Pearson Fellowship in Public Health and Aging provides an opportunity for graduate students in the social sciences to gain exposure to aging research and contribute to projects that help advance the field and AFAR's work.

Maritza Rico
MS Candidate
Public and Urban Policy
The New School

Timothy Dziekan
MPA Candidate
Seton Hall University

AFAR is grateful to Laurie Norris for her ongoing support of this fellowship.

IMPACT OF INVESTMENT

Survey results from recent AFAR grantees show the impact of AFAR's support on their research:

98%
remain in academia

89%
current research relates to their AFAR-supported research

79%
have received NIH funding

57%
have published their AFAR-sponsored research

"In science, questions unearth new questions, and progress builds on progress. Our advanced understanding of how the body ages and how we can extend health has evolved through collaboration and sharing. The close to 4,500 investigators that AFAR has supported for more than four decades are a kind of collective mind: an investment in one researcher is an investment in the aging research community, which is ultimately a long-lasting investment in vitality and longevity for us all."

- Steven N. Austad, PhD, Scientific Director

AFAR STRATEGIC INITIATIVES

AFAR's decades-long commitment to healthy aging has not only advanced research but also laid the groundwork for new discoveries and technologies. Building on this success and the expansion of the field, AFAR's strategic initiatives — currently Amplifying Geroscience, FAST (Finding Aging biomarkers by Searching existing Trials), SuperAgers, and TAME (Targeting Aging with Metformin) — address critical bottlenecks in the basic biology of aging and geroscience by leveraging our extensive expertise and established networks. These strategic initiatives are shaped to address the most pressing needs in aging research. Two, below, were especially impactful in 2024.

AMPLIFYING GEROSCIENCE INITIATIVE

Through the **Amplifying Geroscience Initiative**, AFAR aims to educate policymakers about the transformative and broad benefits of geroscience on older citizens' health and our nation's economy. In 2024, AFAR's Amplifying Geroscience initiative achieved key policy advances through targeted advocacy. AFAR experts met with 11 congressional offices, resulting in two provisions in the Senate draft FY2025 NIH appropriations bill. The first addressed female reproductive aging research needs, while the second called for developing validated biological age measurement tools. AFAR also advocated for including aging biology in the Department of Defense's Peer-Reviewed Medical Research Program, highlighting its potential benefits for military readiness and long-term health. Language supporting this expansion was included in current legislative drafts. A significant breakthrough was securing language that directs NIH to track annual spending on aging biology research — a longstanding AFAR priority. This resulted in the creation of a new Research, Condition, and Disease Categorization (RCDC) category, adopted in the final FY2024 appropriations bill. NIH will release the first data from this tracking system later this year. These accomplishments strengthen the federal infrastructure for aging biology research.

Learn more at www.afar.org/amplifying-geroscience-initiative

SuperAgers Initiative

The multi-year **SuperAgers Initiative** aims to help discover the secrets of exceptional longevity. Led by AFAR and Albert Einstein College of Medicine with Boston University School of Medicine, its centerpiece is the SuperAgers Family Study, which seeks to enroll healthy individuals age 95 and older as well as their offspring and offspring's spouse. The Study's data will be preserved in a newly created "biobank" that will serve as a much-needed resource for researchers working to prevent or treat age-related diseases and conditions.The Study and several SuperAgers have garnered major media coverage, including *Business Insider, CBS News, Fortune Well, Newsweek, NPR Science Friday, The San Francisco Chronicle, The Washington Post,* and more. To date, close to 1,000 participants have enrolled.

Learn more at www.afar.org/superagers

"The reason I'm participating in the SuperAgers Family Study is new adventures. This is a wonderful opportunity to explore something I really don't know much about, but here I am ready, willing, and hopefully able."

- Natalie Ramirez, 95, Miami

AFAR is grateful to James Fickel and the Fickel Family Foundation for their generous support of the Amplifying GeroScience and SuperAgers inititatives.

NIA-FUNDED INITIATIVES

For several years, AFAR has successfully competed for funding from the National Institute on Aging (NIA) of the National Institutes of Health (NIH) to provide infrastructure support and leadership for three initiatives: The **Clinician-Scientists Transdisciplinary Aging Research (Clin-STAR) Coordinating Center**, the **Nathan Shock Centers Coordinating Center (NSC3)**, and the **Research Centers Collaborative Network (RCCN)**. Learn more about each program below and explore highlights on the following pages.

Clin-STAR
Clinician – Scientists Transdisciplinary Aging Research Coordinating Center

AFAR serves as the national program office for the **Clinician-Scientists Transdisciplinary Aging Research (Clin-STAR) Coordinating Center**. The Coordinating Center organizes initiatives for the cultivation, connection, and synergy of clinician- scientists in aging research from disparate spe-cialties across the U.S. The program particularly focuses on early-stage investigators committed to careers in aging research.

NATHAN SHOCK CENTERS OF EXCELLENCE IN THE BASIC BIOLOGY OF AGING

AFAR serves as the Coordinating Center for the eight **Nathan Shock Centers**, which provide leadership and technical support in the pursuit of basic research into the biology of aging. The Nathan Shock Centers Coordinating Center (NSC3) provides coordination and communication between the Centers, the NIA, and the biology of aging research community.

The NSC3 is funded by the National Institute on Aging of the National Institutes of Health under Award Number U24AG056053.

RESEARCH CENTERS COLLABORATIVE NETWORK
of the National Institute on Aging, NIH

AFAR co-manages the **Research Centers Collaborative Network (RCCN)** with Wake Forest University School of Medicine. The RCCN aims to initiate new cross-disciplinary collaborative networks that bring together key thought leaders from each of the seven NIA center programs. Activities include workshops and webinars, pilot programs, early career faculty education, web-based resource identification tools, and fundraising development.

The RCCN is funded by the National Institute on Aging of the National Institutes of Health under Award Number U24AG058556.

2024 HIGHLIGHTS: NIA-FUNDED INITIATIVES

These multi-year initiatives of the NIA/NIH host webinars and meetings, publish research, offer grants and travel awards, provide resources, promote opportunities for professional development, and more.

Clin-STAR

Webinars

"Research to Impact: Translating Your Findings for Clinical and Consumer Audiences" - September 11

"Thinking Inside the Box: A Strategic Approach to More Effective Poster Sessions" - September 25

Publications

"Inflammation and aging-related disease: A transdisciplinary inflammaging framework" - *Geroscience*, October 1

"Frailty integration in medical specialties: Current evidence and suggested strategies from the Clin-STAR frailty interest group" - *Journal of the American Geriatrics Society (JAGS)*, November 25

"Clin-STAR Corner" Series - *Journal of the American Geriatrics Society (JAGS)*, ongoing

"Clin-STAR Journey Stories" Series - clin-star.org, ongoing

Professional Resources

The **Clin-STAR Database** allows users to browse information on fellow researchers' institutions, publications, and grants, with interactive graphics displaying connections by disciplines, publications, and research areas.

Clin-STAR facilitates nine **Special Interest Groups:** (1) Delirium Research, (2) Frailty Research, (3) Inflammation Research, (4) Exercise and Lifestyle Medicine, (5) Perioperative Research, (6) DEIA Research Interest Group, (7) Biology of Aging Research Interest Group, (8) VA Research Interest Group, and (9) R01/R21 Grant Writing Group. Each group pairs early career investigators across disciplines and subspecialties with senior guest researchers to share their work, and receive peer support.

Monthly Mentoring Office Hours connect early career clinician-scientists with senior mentors for one-on-one, confidential conversations about career development.

Explore more at *www.clin-star.org*

Clin-STAR Aging Research Training and Development Grants

These awards aim to prepare early-career investigators for careers in aging-related research and stimulate new collaborations focused on the development of clinically relevant aging research projects. In 2024, four Clin-STAR Aging Research Training and Development Grants were awarded.

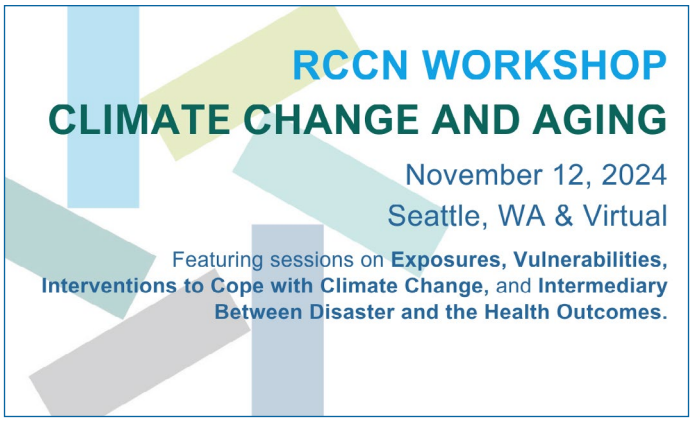
Clin-STAR Annual Meeting

AFAR organizes two key meetings for clinician-scientists supported through NIA funding: The Clin-STAR Annual Meeting and the Beeson Annual Meeting. The meetings are held right after one another, with one overlapping day to optimize networking and mentoring. Clin-STAR meeting attendees include recipients of the NIA Grants for Early Medical/Surgical Specialists' Transition to Aging Research (GEMSSTAR) program, as well as Clin-STAR pilot grantees, Health Equity Program Scholars, and travel awardees. Current and alumni scholars from the NIA's Paul B. Beeson Emerging Leaders Careers Development Award in Aging (K76) attend the Beeson Annual Meeting. The 2024 joint meeting was held near Chicago, IL from November 19 to 22.

The Clin-STAR Annual Meeting is supported through the Clin-STAR Coordinating Center grant (U24AG065204). The Beeson Annual Meeting is supported by an R13 Conference Grant (R13AG058415) from the National Institute on Aging (NIA) and Atlantic Philanthropies.

Right: At the Speed Mentoring session at the Clin-STAR Annual Meeting, attendees receive 'rapid-fire' advice from senior and peer investigators about career- and research-related questions.

RCCN



Webinars

"Career Development Awards at NIA/NIH" - March 22

"Strategies for Preparing Strong Career Development Applications" - April 2

"NIH/NIA Grant Review Process" - May 24

"Stories of Successful K Awards" - July 18

Workshops and Symposia

"Nutrition and Aging Biology"
- June 25-26, San Francisco, CA

"Climate Change and Aging"
- November 12, Seattle, WA

"Fostering Multidisciplinary Solutions in Aging: The Research Centers Collaborative Network"
- November 15, Seattle, WA

Publications

"Celebrating the 50th Anniversary of the National Institute on Aging: NIA Research Centers Collaborative Network" - *The Journal of the American Geriatrics Society*, February

"Research Centers Collaborative Network Workshop on Digital Health Approaches to Research in Aging"
- *Innovation in Aging*, February

"Age-Friendly Research: A Pilot Exploration of Tools to Facilitate Inclusion of Older Adults in Research"
- *Gerontology and Geriatric Medicine*, February

"Perspective: Promoting Healthy Aging through Nutrition: A Research Centers Collaborative Network Workshop Report" - *Advances in Nutrition*, April

"Aging, Race, and Health Disparities: Recommendations from the Research Centers Collaborative Network"
- *The Journals of Gerontology: Series B*, June

"Chronic Stress Exposure, Social Support, and Sleep Quality among African Americans: Findings from the National Survey of American Life-Reinterview"
- *Ethnicity & Health*, June

RCCN Pilot Awards

RCCN Pilot Awards funded four projects that involve multiple NIA-sponsored research centers to foster new and interdisciplinary collaborations.

RCCN Fund for Interdisciplinary Meetings

Launched in 2024, this fund supports relevant meetings organized by other groups that can advance the program's interest in encouraging cross-disciplinary collaborations. One meeting was funded in 2024.

RCCN Scholars Program in Multidisciplinary Research

This program targets clinical and postdoctoral fellows as well as early-career investigators with an interest in multi-disciplinary research. The first cohort met four times.

Explore more at *www.rccn-aging.org*

NSC3

Webinars

"Biosample Resources and Repositories for Aging Biologists"
- October 17

"A Guide to Applying for NIA K Career Development Award" Series with the RCCN - Spring/Summer

Symposia

"Celebrating 50 Years of NIA and 30 Years of Progress at the Nathan Shock Centers" Annual Nathan Shock Directors Meeting - June 2, AGE Annual Meeting, Madison, WI

"Biology of Aging for Non-Biologists" Symposium,
- November 16, GSA Annual Meeting, Seattle, WA

Publications

"Happy 50th to the National Institute on Aging and Happy 30th to the Nathan Shock Centers," special issue - *The Journal of the American Geriatrics Society*, May

"Mapping Epidermal and Dermal Cellular Senescence in Human Skin Aging," - *Aging Cell*, October

NSC3 Pilot Awards and Spotlight Interviews

NSC3 helps promote Pilot Awards through the Nathan Shock Centers, creating opportunities for investigators from other institutions to advance research aligned with each Center's expertise. The NSC3 also publishes Spotlight Interviews to share insights on the awardees' work.

Explore more at *www.nathanshockcenters.org*

AFAR SCIENTIFIC AWARDS OF DISTINCTION

AFAR presents four honorary scientific awards annually to members of the aging research community whose outstanding work advances the field. These awards are named after visionary scientists whose leadership continues to inspire AFAR and the field. Each award is a framed citation and carries a cash prize of $5,000. AFAR presented the awards at ceremonies held at the American Aging Association (AGE) and the Gerontological Society of America (GSA) annual meetings.

Steven N. Austad, PhD

GEORGE M. MARTIN LIFETIME ACHIEVEMENT IN MENTORING AWARD

Established in 2024, this award is named in honor of George M. Martin, MD (1927-2022), a pioneer in the field of aging research and AFAR's Scientific Director for more than a decade, who devoted his long, distinguished career to growing the field of aging research while fostering the careers of junior colleagues. The Award recognizes individuals who during their careers demonstrated extraordinary mentorship in the field of aging research. Dr. Austad is Protective Life Endowed Chair in Healthy Aging Research and a Distinguished Professor in the Department of Biology at the University of Alabama at Birmingham (UAB). He is also Founding Director of UAB's Nathan Shock Center of Excellence in the Basic Biology of Aging and Co-Director of the UAB Integrative Center for Aging Research. He also is the co-PI of the Nathan Shock Centers Coordinating Center and AFAR Scientific Director.

Megan Huisingh-Scheetz, MD, MPH

TERRIE FOX WETLE RISING STAR AWARD IN HEALTH SERVICES AND AGING RESEARCH

Established in 2020, this award is named after current AFAR board member and past Board President Terrie Fox Wetle, PhD, and honors an early or mid-career health services researcher who has already made important contributions with work that respects the value of multi-disciplinary health services science and that is likely to be highly influential in shaping practice and research for decades to come. Dr. Huisingh-Scheetz is an Associate Professor, Associate Director of the Aging Research Program, and Co-Director of the Successful Aging and Frailty Evaluation Clinic in the Section of Geriatrics and Palliative Medicine, University of Chicago. Upon accepting the award, she presented the lecture, "Harnessing Health Services Research to Fuel Frailty Implementation and Innovation."

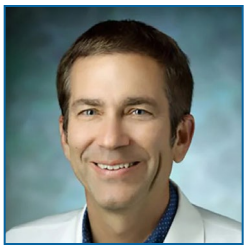
Bérénice Benayoun, PhD

VINCENT CRISTOFALO RISING STAR AWARD IN AGING RESEARCH

Established in 2008, this award is named in honor of the late Dr. Cristofalo for his career-long dedication to aging research and to encouraging young scientists to investigate important problems in aging biology. Dr. Benayoun is an Associate Professor of Gerontology, Biological Sciences, Biochemistry and Molecular Medicine at the University of Southern California Leonard Davis School of Gerontology. Upon accepting the award, she presented the lecture, "Sex-Dimorphic Regulation of Macrophage Aging in Mice."

Jeremy D. Walston, MD, PhD

IRVING S. WRIGHT AWARD OF DISTINCTION



Established in 1982, this award is named in honor of AFAR's founder and recognizes exceptional contributions to basic or clinical research in the field of aging. Dr. Walston is the the Raymond and Anna Lublin Professor of Geriatric Medicine at Johns Hopkins University (JHU), holds multiple leadership roles at JHU, including Director of the Human Aging Project, Co-Director of the Biology of Healthy Aging Program, and Multiple Principal Investigator of the AI and Technology Collaboratory for Aging. The title of his award lecture was "Physical Frailty in Older Adults: What Drives and Prevents It?"

Dr. Walston passed away in June 2025, while this report was finalized. AFAR mourns his loss and is grateful for his contributions to the field as recognized by this award.

Read Ask the Expert interviews with the 2024 Scientific Awards recipients at www.afar.org/ask-the-expert-interviews

ANNUAL GRANTEE CONFERENCE

From May 29 to 31, 2024, AFAR hosted the joint annual Paul F. Glenn/AFAR Conference on The Biology of Aging and the 37th Annual AFAR Grantee Conference in Santa Barbara, California. AFAR grantees, senior leaders in the field, and foundation representatives convened to hear reports on AFAR-supported research and share insights on emerging directions in the field.

The event featured presentations and a poster session where more than 50 AFAR grantees and Nathan Shock Center pilot awardees presented their research. A vital source of scientific exchange and inspiration, the annual conference is a unique opportunity for emerging and established leaders in aging research to gather and to network.

AFAR Board President Thomas A. Rando, MD, PhD, welcomed the meeting participants. A range of AFAR-affiliated experts and colleagues presented, including recent recipients of the Breakthroughs in Gerontology (BIG) Awards and McKnight Brain Research Foundation Innovator Awards in Cognitive Aging and Memory Loss.

Stuart Firestein, PhD, of Columbia University delivered a presentation entitled "Science at the Edge of Uncertainty: An Optimistic View" at the closing reception.

AFAR is grateful to the Glenn Foundation for Medical Research, as well as the many attendees, speakers, and researchers, for their help in making these annual meetings possible.

An integral part of the AFAR grantee conference, poster sessions allow junior investigators to receive feedback from peers and established researchers.

WEBINARS AND BRIEFINGS

BEGINNING IN BIOTECH

To help researchers who are seeking to bridge their work in academic and private sectors, AFAR board member Sergey Young curated and moderated a webinar for the scientific community featuring leaders from emerging longevity biotechs.

SPECIAL TOPIC BRIEFINGS

AFAR hosted a series of special briefings addressing timely issues and hot topics, including a discussion on recently published research on the "Implausibility of Radical Life Extension in Humans in the 21st Century," as well as the healthspan of the 2024 presidential candidates.

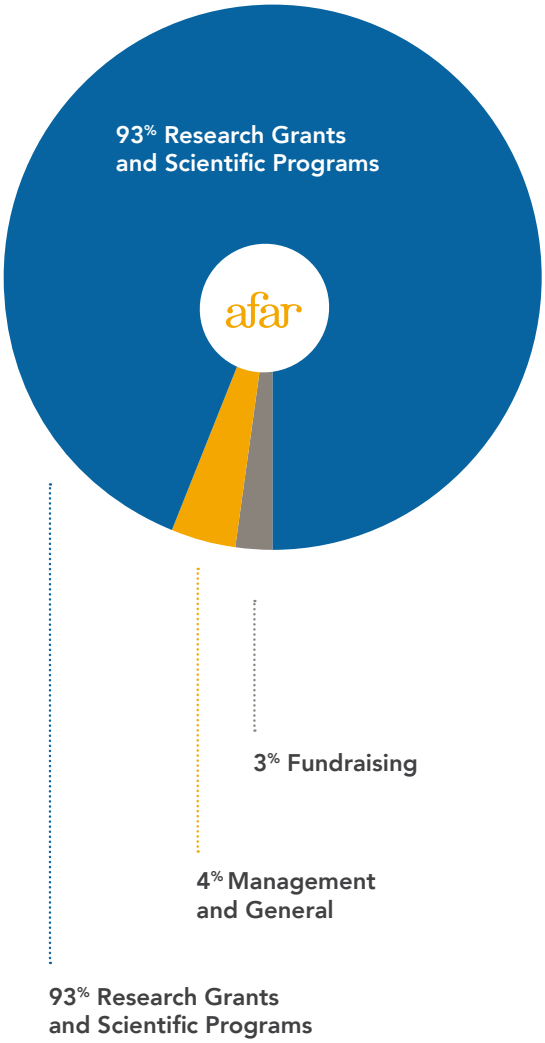
Watch webinar and briefing recordings at www.afar.org/afar-webinars

SUMMARIZED FINANCIAL INFORMATION

Year Ended December 31, 2024

SUMMARIZED OPERATING RESULTS

OPERATING REVENUE		
Contributions	$15,432,630	88%
Investment Income, Net	221,168	1%
Endowment Earnings		
Government Grants	1,910,335	11%
Total Operating Revenue	**$17,564,133**	**100%**
EXPENSES		
Research Grants and Scientific Programs	**$15,875,143**	**93%**
Management and General	651,874	4%
Fundraising	573,387	3%
Total Supporting Expense	**$1,225,261**	**7%**
Total Operating Expense	**$17,100,404**	**100%**
Total Operating Surplus	**$463,729**	



SUMMARIZED BALANCE SHEET

Assets	
Cash and Equivalents	$8,318,901
Operating Investments	3,418,539
Contributions Receivable	19,707,431
Endowment Investments	15,128,598
Other	1,811,918
Total Assets	**$48,385,387**
Liabilities and Net Assets	
Research Grants and Scholarships Payable	$17,781,869
Other	486,537
Total Liabilities	**$18,268,406**
Net Assets	
Without Donor Restrictions	9,476,067
With Donor Restrictions	20,640,914
Total Net Assets	**$30,116,981**
Total Liabilities and Net Assets	**$48,385,387**

AFAR is proud to maintain high fiscal standards internally, and we require the same of our grantee institutions.

Charity Navigator

FOUR-STAR

PERFECT SCORE ON CHARITY NAVIGATOR

For the second year consecutively, AFAR has earned a perfect 100% Score from Charity Navigator, America's largest and most utilized independent charity evaluator. Earned by less than .01% of charities, this score designates AFAR as an official "Give with Confidence" charity. This indicates that we use our donations with the utmost efficacy and responsibility based on Charity Navigator's criteria.

Give with confidence: make a tax-deductible donation to AFAR at www.afar.org/give

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AFAR is grateful to our featured experts for lending their time and insights to our 2024 Annual Report.

This report was produced with the talent and contributions of AFAR Staff (copywriting and design), Ivan Amato (copywriting), and Elizabeth Hanson (copyediting).

Images courtesy of AFAR and featured institutions.

american federation for
AGING RESEARCH

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The mission of AFAR is to support and advance healthy aging through biomedical research