IN MEMORIAM

AFAR dedicates this report to two longtime supporters:

Clarence E. Pearson and Kathryn D. Wriston.

We are grateful for their years of dedication to the field.
FROM SCIENCE INTO MEDICINE: TRANSLATION IN ACTION

Research in the biology of aging has come into its own. More than 30 years ago, Dr. Irving S. Wright foresaw a time when 10,000 baby boomers would turn 65 every day. This realization prompted him to found AFAR in order to create a pipeline of scientists committed to studying the underlying biological process of aging.

Today, decades of knowledge—accumulated through laboratory research and expert vetting—is on its way to translation in humans. Translational research applies findings from basic science to enhance human health and well-being.

Simultaneously, along with the quickening pace of translational research in the lab, headlines have been perpetuating “anti-aging” hype. We’ve heard promises like this before; hawking the promise of immortality is the world’s second-oldest profession. Time passes, and everyone ages. But throughout history, we have known that how old you are can affect how healthy you are.

So let’s be clear.

Researchers are discovering ways to maintain strength, energy, mental sharpness, and engagement through lifestyle changes. Scientists are also working to prevent or, at very least, delay the onset of chronic diseases of aging: cancer, heart disease, diabetes and Alzheimer’s. The focus of this research is maximizing healthspan—the time people can live independently and free of disability. We have before us a unique interdisciplinary opportunity to understand how biological mechanisms of aging underlie disease and disability.

The optimism surrounding our ability to extend healthspan is predicated upon hard-won scientific evidence. We have reached a point where therapies that target the underlying biological processes of aging are within reach.

In this new research landscape, AFAR’s leadership, expertise, and experience are in greater demand than ever. Our grant programs cultivate the best ideas in this research, and attract individuals committed to providing high-quality medical care to our aging population.

In this report, AFAR profiles a few of the scientists we have supported whose work is poised for translation from science into medicine.

William J. Lipton
Chair, Board of Directors

Harvey Jay Cohen, M.D.
President, Board of Directors

Stephanie Lederman
Executive Director
In scientific parlance, senescence is another word for aging. Scientists use this word to describe cells that once had the capacity to actively divide but, owing to the stresses of time, no longer do. In the aging body, senescent cells accumulate—in arthritic joints, in arteries where plaques build up, and in other places associated with chronic diseases such as cancer, diabetes, and Alzheimer’s. These senescent cells don’t sit quietly. They actively secrete substances that exacerbate these conditions.

Might culling these senescent cells from the body—leaving healthy cells and tissues untouched—alleviate chronic diseases and extend healthspan? That’s the focus of research led by AFAR board member James L. Kirkland, M.D., Ph.D., professor of Medicine and Physiology at the Mayo Clinic in Rochester, Minnesota.

Initially, Dr. Kirkland and others at Mayo studied strains of mice genetically engineered to age prematurely. These mice also harbored a suicide gene in their senescent cells that could be activated by a specific substance. Giving these genetically-engineered mice this substance caused their senescent cells to be killed, leading to delayed onset of cataracts, muscle loss, and other age-related conditions. Furthermore, eliminating senescent cells in old mice inhibited the progression of these disorders. More recently, Dr. Kirkland and his colleagues have discovered that two different drugs, given in a single dose, improved heart and vascular function in the genetically engineered mice. In another strain of aging mice, the same drugs alleviated osteoporosis and neurological problems.

“These drugs [called senolytics] appear to have multiple effects, many of which we didn’t suspect,” says Dr. Kirkland. The research suggests that “it may eventually become feasible to delay, prevent, alleviate, or even reverse multiple chronic diseases and disabilities as a group, instead of one at a time.”

As a geriatrician and bench scientist, Dr. Kirkland knows firsthand the impact this could have on people’s lives. “I often see elderly individuals who have 10 or 15 different problems, and who are on 20 different drugs.” Although “it’s very hard to predict how long it will take to translate these kinds of interventions into treatments for people,” the next steps will involve further studies to understand the fundamental underlying mechanisms through which these senolytic drugs are clearing senescent cells.

Ultimately, Dr. Kirkland’s research may lead to drugs with fewer side effects and the capacity to eliminate senescent cells in specific parts of the body or in particular cell types; it’s further possible that these drugs could be tailored to individual patients. “My BIG award has helped me further this research at a time when other funding has become more and more limited. I am grateful to AFAR and the Glenn Foundation for Medical Research for their support.”
Can new drugs slow the effects of aging by targeting toxic cells?
“We need a revolution in our ability to treat dementia and to provide resilience to the brain in both aging and neurological disease,” says Dena Dubal, M.D., Ph.D., assistant professor of Neurology, and David A. Coulter Endowed Chair in Aging and Neurodegenerative Disease at the University of California, San Francisco. Dr. Dubal’s research on klotho—a gene and a protein in mice and in humans—is building a new bridge from understanding the biological processes that underlie aging to designing therapies that boost brain function.

When Dr. Dubal started her research, klotho was largely linked to lifespan. Laboratory animals genetically engineered to produce increased levels of the klotho protein lived longer than those with naturally occurring levels. In people, a genetic variant that increases klotho is associated with protection against heart and kidney disease. Dr. Dubal and her colleagues wondered if klotho might also prevent cognitive decline by slowing age-related processes.

After analyzing samples from more than 700 older adults, the team found that one in five had the proactive klotho gene variant. These people performed better on a wide variety of cognitive tests. Surprisingly, however, human subjects with the klotho gene variant were not protected against cognitive decline with age. Rather, “the difference was that they started at a higher baseline.” Studies in mice suggested a possible mechanism: more klotho strengthened the connections between neurons that make learning possible, not just in old age but throughout life. The results of the team’s research appeared in the journal Cell Reports in 2014 and in the Annals of Clinical and Translational Neurology in 2015.

More recently, Dr. Dubal and her colleagues studied mice engineered to have both high levels of klotho protein and the symptoms of Alzheimer’s disease. As in other mouse-models of Alzheimer’s, the brains of these animals were filled with plaques and Alzheimer-related toxicity; however, elevated klotho seemed to counteract a decline in their learning and memory abilities. These findings were published in the Journal of Neuroscience this year.

“There is strong biological evidence that klotho could be a treatment for age-related brain diseases” by providing a way to increase brain resilience rather than treating diseases themselves. The next steps are investigating ways to boost klotho levels or activity and to identify molecules that mimic its effect.

As a practicing neurologist as well as a bench scientist, Dr. Dubal doesn’t have to look far for further inspiration. “Seeing patients continues to fuel my passion to find impactful discoveries for age-related brain diseases, and I am grateful to AFAR’s support earlier in my career to help me best serve my patients while advancing this research.”
TRANSLATION IN ACTION

Could a treatment that slows aging prevent Alzheimer’s?
Along with gray hair and wrinkled skin, weakness and frailty have long been considered inevitable consequences of old age. In fact, “most of us will lose about 30 percent of our muscle mass over the course of our lifetime,” says Nathan LeBrasseur, Ph.D., associate professor of Physical Medicine and Rehabilitation at the Mayo Clinic in Rochester, Minnesota.

For some, age-related muscle loss—known as sarcopenia—leads to difficulty walking, lifting objects, and, ultimately, living independently. For others, diseases like advanced cancer further aggravate the problem of muscle wasting, a condition called cachexia.

At both the bench and the bedside, Dr. LeBrasseur is laying the groundwork for therapies that can restore muscle mass and, in so doing, extend healthspan. “AFAR’s support early in my career helped me gain the skills to do translational research—moving back and forth between the laboratory and the clinic.”

Dr. LeBrasseur’s investigations focus on myostatin, a protein naturally synthesized and secreted by skeletal muscle. One focus of this research is gaining a better understanding of myostatin’s role in muscle and other tissues. Another is developing accurate ways to measure myostatin concentrations in blood, and then comparing the levels in people who are young, old, or have disease-related muscle loss.

The goal is to translate this knowledge into therapies. Myostatin’s normal function, in part, is to restrain muscle growth. “So the idea is if we can disrupt myostatin in the body through a drug, we can have a powerful effect on muscle health.” These studies in mice have shown that neutralizing myostatin increases both muscle mass and strength in middle-aged and older animals.

One potential use of such a therapy might be to bolster resiliency in people who are frail before they undergo surgery or other medical procedures. Symptoms of frailty, including low muscle mass and poor endurance, increase the likelihood of a host of post-operative complications. By boosting overall strength, a muscle-building therapy could potentially result in shorter hospital stays and lower risk of hospital readmission for these older patients.

An important step toward translating this research into useful therapies is clinical trials; trials that inhibit myostatin function are currently being tested for safety. Such therapies that rejuvenate muscle, Dr. LeBrasseur hopes, “have real potential to prevent disability and improve health and well-being.”
TRANSLATION IN ACTION

Could a drug that builds muscle prevent disability in old age?

NATHAN LeBRASSEUR, M.S., Ph.D.

2002 Glenn /AFAR Scholarship for Research in the Biology of Aging
Reisa Sperling, M.D., M.M.Sc., believes that Alzheimer’s disease is preventable. Turning that belief into a reality means detecting plaques of amyloid protein in the brain—which can begin forming as long as 10 to 20 years earlier than any sign of forgetfulness—and clearing them before they can affect a person’s memory. Dr. Sperling’s research illustrates the interplay between the laboratory and the clinic in solving these problems and bringing forth new therapies.

As director of the Center for Alzheimer Research and Treatment at Brigham and Women’s Hospital, and professor of Neurology at Harvard Medical School, Dr. Sperling has been tackling the challenge of plaque detection for over a decade: significantly, she developed scanning techniques that can image amyloid plaques in living people and assess changes in how the brain is functioning.

This imaging work has led to important insights. “It was the first thing that convinced me that changes related to Alzheimer’s disease were occurring more than a decade before the disease, and that if you wanted to save neurons, you had to start treating the disease even earlier. Support from AFAR allowed me to launch that imaging research, and it came at a critical point when I was just becoming an independent investigator.”

Now, Dr. Sperling is leading the first clinical trial to test a therapy for clearing plaques in people without Alzheimer’s symptoms, only the earliest brain changes. This Anti-Amyloid Treatment in Asymptomatic Alzheimer’s (A4) study began recruiting participants in 2014. Some test patients will receive an investigational antibody treatment designed to clear amyloid and potentially avert Alzheimer’s; others will take a placebo. Throughout the trial, positron emission tomography (PET) will be used to image amyloid, and functional MRI will monitor networks of neurons. Sperling’s team was the first to make the link between amyloid buildup on PET and neuronal network disruption on fMRI.

Although the A4 trial is just gearing up, Dr. Sperling is already looking ahead. Another clinical trial in the planning stages will test a potential therapy to decrease amyloid production.

In the meantime, Dr. Sperling and her colleagues continue to advance imaging technology that can translate into studies of novel therapies. A new technique may help differentiate the brain changes that occur with Alzheimer’s from those due to the normal processes of aging: this method involves PET scans that image tau, a second protein that becomes abnormal in Alzheimer’s and kills neurons. “Amyloid is probably not a ubiquitous aging problem. But tau is part of aging—nearly everybody over the age of 70 has it. We don’t know if some tau is part of ‘normal’ aging or whether it is setting the stage for Alzheimer’s.”
TRANSLATION IN ACTION

With early detection, could Alzheimer’s be stopped?

REISA SPERLING, M.D., M.M.Sc.

2003 Paul Beeson Career Development Award in Aging Research
In 2014, the support of two of AFAR’s longtime collaborators helped advance translational research while maintaining core support and collaborations for research in the basic biology of aging and age-related diseases.

“Our mission is to impact health, not just build up knowledge,” says Mark R. Collins, president and director of the Glenn Foundation for Medical Research. “Basic research is at the core of our programs, but we want to apply the understanding gained through research to human health.”

The Glenn/AFAR Postdoctoral Fellowship Program for Translational Research on Aging was launched in 2014. Up to 10 awards will be given in 2015 to postdoctoral fellows whose research will have translational potential for clinically relevant strategies that address human aging and healthspan. “In order to build and maintain a strong cohort of researchers working on aging, it is essential to attract top talent at this career stage to the field.”

Similarly, The Rosalinde and Arthur Gilbert Foundation, which has funded the New Investigator Awards in Alzheimer’s disease in a partnership with AFAR since 2007, awarded a grant to AFAR in 2014 to convene a diverse group of experts—policymakers and representatives from the foundation world, as well as researchers who have experience in both the lab and the clinic—to explore issues in translational research.

In part, this upcoming meeting is an effort to connect the worlds of medical research and patient care. Notes Martin H. Blank, Jr., Director and C.O.O.: “Moving basic research on the biology of aging into the clinic—for example, to test new drugs or interventions, or to introduce new screening methods—involves doctors, nurses, and other medical professionals. For it to succeed, all parties need to be included in the process.”

Notably, an important segment of this meeting’s audience will be trustees and advisors to other small foundations. “This is a wonderful way for The Rosalinde and Arthur Gilbert Foundation to leverage its resources, and reach out to an audience of other small foundations and help them learn how their resources can move translational research forward.”

By working with other foundations and introducing new partners to aging research, AFAR consistently seeks innovative ways to advance the field. Such collaborations are critical to that process.
How can philanthropy help advance translational research?
2014 SCIENTIFIC REVIEW COMMITTEES

Holly M. Brown-Borg, Ph.D., Chair, AFAR Research Grant Committee and AFAR Vice President
Chester Fritz Distinguished Professor University of North Dakota School of Medicine and Health Sciences

AFAR RESEARCH GRANT FOR JUNIOR FACULTY SELECTION COMMITTEE
Holly Brown-Borg, Ph.D., Chair
University of North Dakota
Heinrich Jasper, Ph.D.
Buck Institute for Research on Aging
Matt Kaeberlein, Ph.D.
University of Washington
Sylvia Lee, Ph.D.
Cornell University
Radhika Muzumdar, M.D.
Children's Hospital of Pittsburgh
Peter Rabinovitch, M.D., Ph.D.
University of Washington

NEW INVESTIGATOR AWARD IN ALZHEIMER’S DISEASE SELECTION COMMITTEE
Norman Relkin, M.D., Ph.D., Chair
Weill Cornell Medical College
Chad Dickey, Ph.D.
University of South Florida, USC Health
Byrd Alzheimer’s Institute
Orly Lazarov, Ph.D.
University of Illinois at Chicago
Mary Sano, Ph.D.
Mount Sinai School of Medicine

BIG AND MIDCAREER SELECTION COMMITTEE
Jim Kirkland, M.D., Ph.D., Chair
The Mayo Clinic, Rochester
Andrew Dillin, Ph.D.
University of California, Berkeley

Peter Hornsby, Ph.D.
University of Texas Health Science Center at San Antonio
William Sonntag, Ph.D.
University of Oklahoma Health Sciences Center
Yusin Suh, Ph.D.
Albert Einstein College of Medicine

GLENN/AFAR POSTDOCTORAL FELLOWSHIP PROGRAM FOR TRANSLATIONAL RESEARCH ON AGING SELECTION COMMITTEE
Jeff Halter, M.D., Chair
University of Michigan, Ann Arbor
Andrew Brack, Ph.D.
Massachusetts General Hospital
Anne Cappola, M.D.
University of Pennsylvania
Salvatore Oddo, Ph.D.
Banner Sun Health Research Institute
Martin Sadowski, M.D., Ph.D.
New York University School of Medicine
Norman Sharpless, M.D.
University of North Carolina
Randy Strong, Ph.D.
University of Texas Health Science Center at San Antonio
Grace (Beth) Stutzmann, Ph.D.
Rosalind Franklin University
George Taffet, M.D.
Baylor College of Medicine
Bruce Troen, M.D.
University at Buffalo - The State University of New York
Holly Van Remmen, Ph.D.
Oklahoma Medical Research Foundation
“For our Biology of Aging Grant Programs portfolio, AFAR receives almost 300 letters of intent and draws from a roster of hundreds of leading scientists nationwide to review our grant applications. In 2014, we streamlined several of our review processes while maintaining fairness and rigor.

“Our reviewers for the grant programs—selected for both their special expertise and their broad knowledge of the aging field—screen these letters of intent. Applicants whose projects best align with the goals of AFAR’s grants are then invited to submit more detailed applications for review by a committee of experts. All committee members read and rank all applications before convening to decide on the awards.

“AFAR’s careful vetting process is highly regarded in the field. Notably, many of the review committee members are past AFAR grantees; thus, our commitment to paving the way for scientists and clinicians to progress in their careers comes full circle.

“We are grateful for their time and dedication to this process.”

PROGRAM ADVISORY COMMITTEE FOR THE BEESON CAREER DEVELOPMENT AWARD

Thomas Gill, M.D., Chair
Yale University School of Medicine
Kenneth Covinsky, M.D., M.P.H.
University of California, San Francisco
School of Medicine
Jean Kutner, M.D., M.S.P.H.
University of Colorado Health Sciences Center
Mark Lachs, M.D.
Weill Cornell Medical College
Kristine Yaffe, M.D.
University of California, San Francisco
School of Medicine
Raymond L. Yung, M.B.Ch.B.
University of Michigan, Ann Arbor

MEDICAL STUDENT TRAINING IN AGING RESEARCH (MSTAR) PROGRAM NATIONAL SELECTION COMMITTEE

Alison Moore, M.D., M.P.H., Chair
University of California, Los Angeles
Julie Bynum, M.D.
Geisel School of Medicine at Dartmouth
Theodore Johnson, M.D., M.P.H.
Emory University
Kamal Masaki, M.D.
University of Hawaii
Ellen Roberts, Ph.D., M.P.H.
University of North Carolina
Heather Whitson, M.D., M.H.S.
Duke University School of Medicine

GLENN/AFAR SCHOLARSHIPS FOR RESEARCH IN THE BIOLOGY OF AGING SELECTION COMMITTEE

Paul Agris, Ph.D., Chair
State University of New York at Albany
Dena Dubal, M.D., Ph.D.
University of California, San Francisco
William Ja, Ph.D.
The Scripps Research Institute
Nathan LeBrasseur, Ph.D.
The Mayo Clinic, Rochester
Jonathan Wanagat, M.D., Ph.D.
University of California, Los Angeles

“When you apply for an AFAR grant, you know that your work will be evaluated and critiqued by the best aging experts, so the satisfaction that your scientific views are appreciated by the leaders in our field is the biggest encouragement that a young scientist can get.”

Subhash D. Katewa, Ph.D.
Buck Institute for Research on Aging
2014 AFAR Research Grant for Junior Faculty Awardee
AFAR RESEARCH GRANTS FOR JUNIOR FACULTY

Christin Burd, Ph.D.
Assistant Professor,
Ohio State University

Jason Butler, Ph.D.
Assistant Professor,
Weill Cornell Medical College

Fabio Demontis, Ph.D.
Assistant Member,
St. Jude Children’s Research Hospital

Ilya Finkelstein, Ph.D.
Assistant Professor,
University of Texas at Austin

Jason Held, Ph.D.
Assistant Professor,
Washington University School of Medicine

Jason Karpac, Ph.D.
Assistant Professor,
Texas A&M University Health Science Center

Subhash Katewa, Ph.D.
Assistant Research Professor,
Buck Institute for Research on Aging

Jason MacGurn, Ph.D.
Assistant Professor,
Vanderbilt University Medical Center

Alexander Soukas, M.D., Ph.D.
Assistant Professor of Medicine,
Massachusetts General Hospital

NEW INVESTIGATOR AWARDS IN ALZHEIMER’S DISEASE

Michal Arbel, Ph.D.
Instructor in Neuroscience,
Massachusetts General Hospital

Roberto Fernandez-Romero, M.D., M.P.H., Ph.D.
Assistant Professor,
University of Virginia

Catherine Kaczorowski, Ph.D.
Assistant Professor,
University of Tennessee Health Science Center

Joshua Shulman, M.D., Ph.D.
Assistant Professor,
Baylor College of Medicine

ARTHRITIS AND AGING RESEARCH GRANT

Nidhi Bhutani, Ph.D.
Assistant Professor,
Stanford University

“AFAR has been instrumental in launching my research career in aging. Receiving AFAR research awards early in my career allowed me to make a successful transition to full-time research on the biology of aging, which I am continuing thanks to my recent Breakthroughs in Gerontology (BiG) award.”

Stephen L. Helfand, M.D.
Brown University
1992 & 1995 AFAR Research Grant for Junior Faculty Awardee
2014 Glenn /AFAR Breakthroughs in Gerontology Award Recipient
“Great diversity is a hallmark of AFAR’s Biology of Aging grants program. AFAR supports a wide range of approaches to investigating the fundamental biological processes of how and why we age. While maintaining a core investment in basic biomedical research, these grants also help advance translational projects that are making basic discoveries relevant to the practice of medicine.

“AFAR is a leader in supporting young scientific talent at all levels—from graduate and medical students to postdoctoral fellows and assistant professors. With a shortfall in funding at the national level, AFAR’s mission to support young scientists is more important than ever. But just as critical is the assistance that AFAR gives to researchers that allows them to continue to focus on aging as they advance in their careers, with grant programs tailored to mid-career and senior scientists.

“By paving a career track, populating the field, and cultivating leaders, AFAR’s Biology of Aging grants help create a career pipeline that is essential to advancing better medicine for age-related diseases.”

“Funding from AFAR has given me the ability to pursue a timely question in aging biology that might have otherwise been put on hold.”

Christin Burd, Ph.D.
Ohio State University
2014 AFAR Research Grant for Junior Faculty Awardee

JULIE MARTIN MID-CAREER AWARDS IN AGING RESEARCH
Malene Hansen, Ph.D.
Associate Professor,
Sanford-Burnham Medical Research Institute
Satchidananda Panda, Ph.D.
Associate Professor,
Salk Institute

GLENN/AFAR BREAKTHROUGHS IN GERONTOLOGY (BIG) AWARDS
Stephen Helfand, M.D.
Professor of Biology,
Brown University
Heinrich Jasper, Ph.D.
Professor,
Buck Institute for Research on Aging

ELLISON MEDICAL FOUNDATION /AFAR POSTDOCTORAL FELLOWS
Lin Guo, Ph.D.
Postdoctoral Researcher,
University of Pennsylvania
Su Jeong Kim, Ph.D.
Postdoctoral Fellow,
University of Southern California
Lifen Wang, Ph.D.
Postdoctoral Researcher,
Buck Institute for Research on Aging

GLENN/AFAR POSTDOCTORAL FELLOWSHIP PROGRAM FOR TRANSLATIONAL RESEARCH ON AGING
Andrew Arrant, Ph.D.
Postdoctoral Trainee,
University of Alabama at Birmingham

Tracy Brennan, Ph.D.
Postdoctoral Fellow,
University of Pennsylvania School of Medicine
Tyesha Burks, Ph.D.
Postdoctoral Trainee,
Johns Hopkins Asthma & Allergy Center
Damien Callahan, Ph.D.
Postdoctoral Fellow,
University of Vermont
Ying Ann Chiao, Ph.D.
Postdoctoral Fellow,
University of Washington
Simon Johnson, Ph.D.
Postdoctoral Researcher,
Albert Einstein College of Medicine
Chen-Yu Liao, Ph.D.
Postdoctoral Research Fellow,
Buck Institute for Research on Aging
Christopher Martens, Ph.D.
Postdoctoral Research Associate,
University of Colorado at Boulder
Hyejung Won, Ph.D.
Postdoctoral Scholar,
University of California, Los Angeles
Ming Xu, Ph.D.
Research Fellow,
The Mayo Clinic, Rochester
2014 PHYSICIAN TRAINING PROGRAMS

Richard W. Besdine, M.D.
AFAR Medical Officer
Professor of Medicine, Greer Professor of Geriatric Medicine, and Director, Division of Geriatrics and Palliative Medicine – Alpert Medical School of Brown University; Professor of Health Services Policy and Practice, and Director, Center for Gerontology and Health Care Research – Brown University School of Public Health

BEESON CAREER DEVELOPMENT AWARDS IN AGING RESEARCH
Kumar Dharmarajan, M.D., M.B.A.
Assistant Professor of Medicine (Cardiology), Yale University School of Medicine
Anne Hiniker, M.D., Ph.D.
Clinical Instructor of Neuropathology, University of California, San Francisco
Jennifer Lai, M.D., M.B.A.
Assistant Professor of Medicine, University of California, San Francisco
Kasia Lipska, M.D.
Instructor, Yale University
Donovan Maust, M.D.
Assistant Professor of Psychiatry, University of Michigan, Ann Arbor
John Newman, M.D., Ph.D.
Research Fellow, University of California, San Francisco
Kelly Trevino, M.D.
Assistant Professor of Psychology in Medicine, Weill Cornell Medical College
Kathleen Unroe, M.D.
Assistant Professor of Medicine, Indiana University

THE JOHN A. HARTFORD FOUNDATION CENTERS OF EXCELLENCE IN GERIATRIC MEDICINE AND TRAINING
Baylor College of Medicine
Boston University
Brown University
Weill Cornell Medical College
Duke University
Emory University (Southeast Center of Excellence)
Harvard University
Icahn School of Medicine at Mount Sinai
Indiana University
Johns Hopkins University
University of Alabama at Birmingham
University of California, Los Angeles
University of California, San Diego (Geriatric Psychiatry)
University of California, San Francisco
University of Chicago
University of Colorado at Denver
University of Hawaii
University of Michigan, Ann Arbor
University of North Carolina at Chapel Hill
University of Pennsylvania
University of Pittsburgh
University of Pittsburgh (Geriatric Psychiatry)
University of Rochester
University of Texas Health Science Center at San Antonio
University of Washington
University of Wisconsin–Madison
Wake Forest University
Yale University

“My [MSTAR] experience will push me to become a better physician. This opportunity will become one of the building blocks of my career.”
Sruti Brahmandam
Northeast Ohio Medical University
2014 MSTAR Scholar

For the complete list of the 138 scholars who participated in the Medical Student Training in Aging Research (MSTAR) program in 2014, please visit www.afar.org/research/grantees.
“Each day, 10,000 people in the United States turn 65 years old, yet there are fewer than 7,500 certified geriatricians nationwide, and surprisingly, only a handful of medical schools offer mandatory courses or rotations in geriatrics. AFAR’s Physician Training programs help student and faculty researchers become sensitive leaders in the field who can best meet the growing health care needs of this ever-growing population.

“Since 1994, the Medical Student Training in Aging Research (MSTAR) program has provided a mentored research, didactic, and clinical experience for medical students to learn about the care of older adults. The Paul B. Beeson Career Development Awards support clinically trained individuals as leaders in their institutions and in the field. The Beeson program, which also is recognized as one of the most prestigious and competitive in the field, celebrated its 20th year in 2014. AFAR also oversees the John A. Hartford Foundation Centers of Excellence (CoE) in Geriatric Medicine and Training program, investing in the recruitment and retention of fellows and junior faculty in geriatric medicine and geriatric psychiatry.

“AFAR proudly presents the 2014 recipients of these physician training programs and applauds their work on the front lines of translating research on aging into day-to-day improvements in health care.”

To date, AFAR has given more than $150 million to over 3,000 investigators through our grant programs.
AFAR BOARD OF DIRECTORS
Nir and Laura Barzilai
Charles and Barbara Beever
Marie A. Bernard
Richard Besdine
Caroline S. Blaum
Holly Brown-Borg
Harvey Jay Cohen
Ann M. Connolly
Gaetano Crepaldi
Helen Edelberg
Jay Edelberg
William and Elizabeth Evans
Michael I. and Joan Murray Frankel
Alexandra L. Gatje
William J. Hall
Michael W. Hodin
Thomas and Marilyn Kahn
Peter and Elbrun Kimmelman
Mark S. Lachs
Kevin Lee and Leslie Vosshall
Dr. Carol M. and Mr. William J. Lipton
Stefania Maggi
Roger and Christine McCarter
Allen W. Mead and Mary Evelyn Dean Mead
Clarence Pearson and Laurie Norris
Joan L. Quinn
John Rhodes and Lucy Allen
Corinne H. Rieler
Richard L. Sprott
Hume R. Steyer
John T. Watters
Terrie Fox Welle
Joyce M. Yaeger
Gary L. Zwerling

AFAR FORMER, HONORARY AND EMERITUS DIRECTORS
John C. Beck
Dr. and Mrs. Jacob Brody
Judith Campisi
Hadley and Mary Ford
Diana Jacobs Kalman
Dr. and Mrs. Jerome Kowal
George M. Martin
Mark Monane
Diane A. Nixon
William and Carolyn Sturt
Mary J. Veverka
Patrick J. Waide

CORPORATIONS / FOUNDATIONS / EDUCATIONAL INSTITUTIONS / ORGANIZATIONS
Anonymous
AARP
Alexandra Foundation
Alliance for Aging Research
IJ Altfest & Company
American Geriatrics Society
The Atlantic Philanthropies
Rose M. Badgeley Residuary Charitable Trust
Bank of America
Bank of America Merrill Lynch
The Carwill Foundation
Charina Foundation, Inc.
DMSM LLC
Jean and Louis Dreyfus Foundation, Inc.
Duke University Center for the Study of Aging
The Charles Edison Fund
The Lawrence Ellison Foundation
EmblemHealth
Owen J. Flanagan & Company
The Gerontological Society of America
The Rosalinde and Arthur Gilbert Foundation
GlaxoSmithKline
Glenn Foundation for Medical Research
Grantmakers in Aging
The John A. Hartford Foundation
Jarvie Commonweal Service
Meritta Jean Speerstra Jennesse Trust
The Lowell E. Johnson Foundation
The Marion Eiser Kaufmann Foundation
F. M. Kirby Foundation
The Jan M. & Eugenia Krol Charitable Foundation
The Lucius N. Littauer Foundation

“MetLife Foundation recognizes AFAR’s deep connections in the field and the strong management they provide for our annual Awards for Medical Research in Alzheimer’s Disease and the Medical Student Training in Aging Research (MSTAR) program. Our partnership with AFAR has been instrumental in attracting the caliber of talent we recognize and honor.”

– Dennis White, president and C.E.O.
MetLife Foundation
AFAR is deeply grateful to our donors for their generous support. Their continued contributions enable us to fulfill our mission and strengthen our programs.

“In terms of charitable giving, I favor programs that embody leveraged approaches for advancing society. AFAR’s research grants address one of the greatest global challenges—healthspan in aging—and offer enormous potential.”

– Peter Kimmelman, AFAR Board Member
On November 12th, AFAR held our Regional Awards Dinner at the Lotos Club in New York City. More than ninety guests attended, helping to raise nearly $130,000 in support of our mission to advance healthy aging through biomedical research. Themed “Health & Wealth,” the event honored leaders from the financial and philanthropic sectors for their dedication to aging research. The evening kicked off with a roundtable discussion featuring financial, scientific, and policy experts, moderated by AFAR board member and executive director of the Global Coalition on Aging, Michael W. Hodin, Ph.D.

Sidney Lerner  
Scott M. Lesowitz  
Marc Levine  
Lewis Lipsitz  
Betty L. Long  
Phyllis Lusskin  
Martha Maas  
John R. Mach  
Robert Mathewson  
Carlyn McCaffrey  
Skye McDougall  
James and Meg McLaughlin  
Audrey McNiff  
Hector Medora  
Karole Mendelsohn  
Richard and Ronay Menschel  
Helen Mitchell  
Ann Mittelmann  
Sandra Moody Levin  
Richard Morgan  
Russell and Helen Morgan  
Jeffrey L. Neuman  
Richard K. Noback  
Adrian and Nancy O’Leary  
Elizabeth Palmer and Thomas Rally  
Christopher T. Pell  
Richard J. Pine  
Andrea Plevan  
William Podd  
Jordan S. Press  
Daniel Promislow  
Nancy Purifoy  
Evelynn U. Putnam  
Kathy Rabbers  
Lorrie Rankin  
Michael Rantz  
Lorraine Reich  
Rebecca Resinski  
Susan L. Resnik  
Lynette Reyna  
Jean Evans Rich  
Jo Anne Robbins and David K. Falk  
Patrick Robbins  
Edward R. Roberts  
Theresa Roeder  
Leonard Rokaw  
Matthew J. Ruple  
Earl A. Samson  
Kathleen A. Schmalz  
Marvin Schneiser  
Dennis and Andrea Schmidt  
M. Roy and Thelma Schwarz  
John L. Seidler  
Ashley Sever  
Samuel Seymour  
Miles Shea  
David A. Sinclair  
Susan Sinclair  
Patricia Sirhan  
Frank Skerbetz  
Ethell Smith  
Frank Spokane  
Peter D. and Joan F. Stogis  
Barbara A. Taylor  
Dara Tesse  
Ernest Thomas  
Michael Thomas  
Dette & Thomas Thompson  
Rebecca Tsurumi  
George M. Van Cleave  
Ann Visgilio  
Norman Volk  
Lois Wagh  
Jeremy D. Walston  
Anne Weber  
J. Fred Weintz, Jr.  
Toby Wertheim  
Rosalinde Westling  
Margaret L. Wolff  
Binglong Yang  
M. Helen Yates  
Barbara A. Yener  
Janet Zemlin  
Joan Zuckerman

“As a trustee of the John A. Hartford Foundation—one of AFAR’s partners in improving the healthcare of seniors in America—I am pleased that the MSTAR program helps doctors-in-training discover the unique needs of older patients.”

– Lile Gibbons, Trustee  
The John A. Hartford Foundation

On September 9th, AFAR celebrated the 20th anniversary of the MSTAR program with a special reception at the home of Norman Volk, chairman of the John A. Hartford Foundation, and his wife, Alicia Volk. The intimate event honored one of our key supporters, Kathryn D. Wriston, the Hartford Foundation’s retiring president (above).
Board member S. Jay Olshansky shared insights on the socioeconomic impact of aging research.

Corinne Reider, retiring executive director and treasurer of the John A. Hartford Foundation, received the Honorary Leadership Award from Marie Bernard of the National Institute on Aging.

AFAR treasurer Ann Connolly, executive committee member Fox Wetle, chair emerita Diana Kalman, and medical officer Richard Besdine enjoyed the festivities.

MSTAR (Medical Student Training in Aging Research) program students joined supporters at the dinner.

“LIVE LONGER, LIVE WELL” IN LONDON

On October 27th, AFAR co-hosted a special event at the House of Lords in London with the British Society for Research on Ageing and the Glenn Foundation for Medical Research. The event engaged politicians and scientists and premiered the “Live Longer, Live Well” video, designed by acclaimed data journalist David McCandless and sponsored by the Glenn Foundation in collaboration with AFAR, with guidance from Richard Faragher, Ph.D., professor of Biogerontology at the University of Brighton, UK, as well as Research America.

AFAR board members Jim Kirkland and Mark Collins with Richard Faragher of the British Society for Research on Ageing.

Helen Griffith of the British Society for Research on Ageing with AFAR executive director Stephanie Lederman.

Baroness Gould of Potternewton greeted guests.
# SUMMARIZED FINANCIAL INFORMATION

Year Ended December 31, 2014

## SUMMARIZED OPERATING RESULTS

### OPERATING REVENUE

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributions</td>
<td>10,392,413</td>
<td>97%</td>
</tr>
<tr>
<td>Investment Income, Net</td>
<td>3,408</td>
<td>–</td>
</tr>
<tr>
<td>Endowment Earnings</td>
<td>276,073</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>19,483</td>
<td>–</td>
</tr>
<tr>
<td><strong>Total Operating Revenue</strong></td>
<td><strong>10,691,377</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

### EXPENSES

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Grants and Scholarships</td>
<td>8,971,001</td>
<td></td>
</tr>
<tr>
<td>Meetings and Public Education</td>
<td>555,763</td>
<td></td>
</tr>
<tr>
<td><strong>Total Program Expense</strong></td>
<td><strong>9,526,764</strong></td>
<td><strong>91%</strong></td>
</tr>
<tr>
<td>Management and General</td>
<td>449,023</td>
<td></td>
</tr>
<tr>
<td>Fundraising</td>
<td>461,391</td>
<td></td>
</tr>
<tr>
<td><strong>Total Supporting Expense</strong></td>
<td><strong>910,414</strong></td>
<td><strong>9%</strong></td>
</tr>
<tr>
<td><strong>Total Operating Expense</strong></td>
<td><strong>10,437,178</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

### Total Operating Income

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Operating Income</strong></td>
<td><strong>254,199</strong></td>
<td><strong>2%</strong></td>
</tr>
</tbody>
</table>

## SUMMARIZED BALANCE SHEET

### Assets

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>6,030,510</td>
<td>21%</td>
</tr>
<tr>
<td>Contributions Receivable</td>
<td>12,633,276</td>
<td>43%</td>
</tr>
<tr>
<td>Investments</td>
<td>9,187,155</td>
<td>32%</td>
</tr>
<tr>
<td>Other</td>
<td>1,300,253</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td><strong>29,151,194</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

### Liabilities and Net Assets

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Grants and Scholarships</td>
<td>2,816,627</td>
<td>10%</td>
</tr>
<tr>
<td>Other</td>
<td>48,870</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td><strong>2,865,497</strong></td>
<td><strong>10%</strong></td>
</tr>
</tbody>
</table>

### Net Assets

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrestricted</td>
<td>4,549,654</td>
<td>16%</td>
</tr>
<tr>
<td>Temporarily Restricted*</td>
<td>17,855,797</td>
<td>61%</td>
</tr>
<tr>
<td>Permanently Restricted Endowment</td>
<td>3,880,246</td>
<td>13%</td>
</tr>
<tr>
<td><strong>Total Net Assets</strong></td>
<td><strong>26,285,697</strong></td>
<td><strong>90%</strong></td>
</tr>
</tbody>
</table>

### Total Liabilities and Net Assets

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Liabilities and Net Assets</strong></td>
<td><strong>29,151,194</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

* Funding pledged in support of future programming

The above summarized financial information is derived from the organization’s audited financial statements, which are available upon request.
The American Federation for Aging Research (AFAR) has long led the field of biomedical research on aging. For over 30 years, we have offered a broad range of grants aimed at identifying, funding, and mentoring talented scientists dedicated to understanding the biology of aging.

Our distinguished research committees are comprised of the nation’s leading experts, who conduct peer reviews and build consensus to ensure that the highest quality candidates are selected for funding. AFAR builds the intellectual resources—the pipeline of scientists and medical professionals—who will tackle the challenges of an aging population that is living longer and is expected to increase almost fourfold by 2050.

Through AFAR’s leadership, the field of aging has reached a turning point. Exciting new scientific discoveries have the potential to transform our understanding of the processes of aging in order to help us all live healthier, longer.

By helping AFAR build the pipeline of research, our individual supporters and donors from the foundation, corporate, and government sectors actively help sponsor our programs and advocate on our behalf. But we still need your help to facilitate further advancements in scientific innovation, provide more physicians with the combination of medical, academic, and scientific training needed to serve an aging population, and increase public education on healthy aging. Please join us by becoming an AFAR donor. We offer a range of giving options for your consideration:

• Make a gift to our annual campaign, the central vehicle through which our core AFAR research grant program and our operations are funded. Our administrative and overhead costs are kept to a minimum, ensuring that 91% of your donation goes directly to programs. Gifts may be made annually or through our monthly and quarterly gifts program.

• Make a gift to underwrite or endow a named research grant. Naming opportunities in support of AFAR research grants, new investigator, or disease-specific grants are available at multiple levels of giving.

• Make a gift to sponsor scientific conferences or public educational programs. Naming opportunities in support of AFAR informational activities are available at several levels of giving.

• Make a planned gift or bequest.

• Make a memorial or a tribute gift to honor a loved one or mark a special occasion.

• Make a gift through your employer’s matching gift program, which leverages additional funds.

• Make a gift of stock or other tangible property.

For additional information, please contact Stephanie Lederman at stephanie@afar.org.

For sound fiscal management and commitment to accountability and transparency, AFAR’s accomplishments and low administrative expenses have secured the highest rating from Charity Navigator, an independent evaluator of the nation’s charities.
BOARD OF DIRECTORS

Irving S. Wright, M.D., Founder
William J. Lipton, J.D., LL.M., C.P.A., Chair

HONORARY AND EMERITI DIRECTORS
Hadley C. Ford, Sc.B., M.B.A., Chair Emeritus
Diana Jacobs Kalman, Chair Emerita
Senator John H. Glenn, Honorary Director
George M. Martin, M.D., Scientific Director Emeritus
Diane A. Nixon, Vice Chair Emerita

BOARD OF DIRECTORS
Paul F. Agris, Ph.D.
Steven N. Austad, Ph.D., Scientific Director
Nir Barzilai, M.D., Deputy Scientific Director
Charles Beever, M.B.A., Secretary
Marie A. Bernard, M.D., Federal Liaison - ex-officio
Richard W. Besdine, M.D., Medical Officer
Caroline S. Blaum, M.D., M.S., Deputy Medical Officer
Holly M. Brown-Borg, Ph.D., Vice President
Harvey Jay Cohen, M.D., President
Mark R. Collins
Ann M. Connolly, M.B.A., Treasurer
Gaetano Crepaldi, M.D.
Helen K. Edelberg, M.D., M.P.H.
Jay M. Edelberg, M.D., Ph.D.
William J. Evans, Ph.D.
Joan Murtagh Frankel, J.D.
Linda P. Fried, M.D., M.P.H.
Alexandra L. Gatje
William J. Hall, M.D.
Michael W. Hodin, Ph.D.
Thomas G. Kahn, C.F.A.
Peter Kimmelman, J.D.
Mark S. Lachs, M.D., M.P.H.
Kevin J. Lee, Ph.D.
Stefania Maggi, M.D., Ph.D., M.P.H.
Rick A. Martinez, M.D.
Roger J. McCarter, Ph.D., Immediate Past President
Allen W. Mead, M.D.
S. Jay Olshansky, Ph.D.
Clarence Pearson, M.P.H.
Joan L. Quinn, R.N., M.S.N., F.A.A.N.
Norman R. Relkin, M.D., Ph.D.
John B. Rhodes, M.B.A.
Corinne H. Rieder, Ed.D.
Gary Ruvkun, Ph.D.
Richard L. Sprott, Ph.D.
Hume R. Steyer, J.D.
John T. Watters, M.B., Ch.B.
Terrie Fox Wetle, Ph.D.
Joyce M. Yaeger
Gary L. Zwerling, M.B.A.
Stephanie Lederman, Ed.M., Executive Director

STAFF
Stephanie Lederman, Executive Director
Shelley Binder, Senior Director of Philanthropy*
Frederica Blum, Director of Finance
John Chaich, Communications Officer
Catherine Cullar, Administrative Manager
Ross Heidecker, Associate Development Officer

Hattie Herman, Program Officer
Suzanna Lee, Grant Programs Assistant
Gemma Martinelli, Communications and Development Assistant
Odette van der Willik, Deputy Executive Director and Director, Grant Programs

* immediate past
The American Federation for Aging Research (AFAR) is a national non-profit organization whose mission is to support and advance healthy aging through biomedical research. Learn more about our programs at afar.org and get expert advice on living a healthier, longer life at our online resource, InfoAging.org.

AFAR focuses our activities on four major initiatives:

- Identifying and funding a broad range of cutting-edge research most likely to increase knowledge about healthy aging.
- Attracting more physicians to specialize in geriatric medicine to meet the demands of an aging population with expert health care.
- Creating opportunities for scientists and clinicians to share knowledge and exchange ideas to drive innovation in aging research.
- Providing information to the public on new medical findings that can help people live longer lives, less susceptible to disease and disability.

Special thanks to all of the featured experts for their time and care in contributing to this report.

AFAR 2014 Annual Report Creative Team:
John Chaich, M.F.A., Designer
Elizabeth Hanson, Ph.D., Copywriter
Barbara Bigelow, Copyeditor
Photography courtesy of featured experts, as well as Lori Schroth (p 8), Duncan Soar Photography (p 21, bottom), and Studio 7 NYC Photography (p 1, pp. 20–21).