Aging in America

America's population is aging dramatically. More than 10,000 of the 78 million Baby Boomers are turning 65 every day.\(^1\) Approximately 20% of the population will be 65 years of age and older by 2030.\(^2\)

Care for older adults with multiple conditions accounts for 66% of health care spending. Experts predict that health care costs will increase 25% by 2030, primarily due to this population aging. Spending for Medicare alone will jump by more than 60% in the next 10 years, from $555 billion in 2011 to $903 billion by 2020.\(^3\)

This aging population poses unique scientific, medical and societal challenges that must be met if people are to live long, healthy, and productive lives.

What is AFAR?

The American Federation for Aging Research (AFAR) is a national non-profit organization founded in 1981. Its mission is to support and advance healthy aging through biomedical research. AFAR invests in medical research to advance a better understanding of how aging processes increase our vulnerabilities to diseases as we age.

AFAR has awarded approximately $160 million in grants to more than 3,200 talented scientists and trainees. It funds scientists at all stages of their careers, providing grants which range from $7,500 to $220,000. AFAR identifies and supports cutting-edge research and encourages physicians to address the needs of older adults. AFAR provides opportunities for scientific exchange and collaborations, and updates the public on significant medical findings.

Aging and Disease

Age is a major risk factor for several physically, mentally, and economically devastating diseases typical of old age. Science provides the tools to uncover the connections between aging and illness. AFAR funds research projects which examine the impact of aging on the development and progression of diseases such as diabetes.

Diabetes

- Diabetes describes a group of metabolic diseases related to the levels of and body’s responses to insulin
- Diabetes affects 1 in 12 Americans. It jumps to 1 in 4 in Americans over 65\(^4\)
- Diabetes is the 6th leading cause of death in adults over age 65\(^5\)
- Diabetes significantly diminishes quality of life
- Diabetes is the leading cause of blindness among adults ages 20-74\(^6\)
- More than 60% of nontraumatic lower-limb amputations are performed on people with diabetes
- Diabetes also contributes to other serious conditions such as heart disease, stroke, and kidney failure\(^6\)
AFAR’s Grants to Diabetes Research

- Since 1984, over $4.1 million has been awarded to 31 scientists conducting diabetes-related research at 21 institutions in 10 states

AFAR Grantees conducting noteworthy Diabetes Research

- Cynthia Boyd, MD, MPH: Associate Professor of Medicine, Johns Hopkins University School of Medicine
  AFAR Beeson Scholar, 2009

- Meredith A. Hawkins, MD: Director, Global Diabetes Institute; Chair in Medicine; Professor, Medicine (Endocrinology), Albert Einstein College of Medicine
  AFAR Beeson Scholar, 2003

- Brett Lauring, MD, PhD: Executive Director, Project Leadership, Diabetes & Endocrinology, Merck
  AFAR Beeson Scholar, 2000

- Sei Lee, MD, MAS: Assistant Professor of Medicine, University of California, San Francisco School of Medicine
  AFAR Beeson Scholar, 2011

- Nicolas Musi, MD: Professor of Medicine; Director, Center for Healthy Aging; Chair in Translational/ Clinical Research in Geriatrics, University of Texas Health Science Center at San Antonio
  AFAR Beeson Scholar, 2007

- Alan R. Shuldiner, MD: Professor of Medicine, University of Maryland, Baltimore School of Medicine
  AFAR Beeson Scholar, 1995

“…tight control [of diabetes] imposes a major burden on how [older] people live their lives. We have to resort to stronger medicines and more monitoring… In nursing homes, patients tell me, ‘I used to enjoy so many things that I can’t do anymore. Food is one of the few pleasures I still have, and now you’re going to take that away from me?’”

— Sei J. Lee, MD, April 2011

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3 Centers for Disease Control and Prevention. The State of Aging and Health in America 2013.
4 Centers for Disease Control and Prevention. 2011 National Diabetes Fact Sheet.
5 Centers for Disease Control and Prevention. The State of Aging and Health in America 2013.
Aging & Diabetes | AFAR Funded Research Projects

Nir Barzilai, MD, Albert Einstein College of Medicine: Aging Effects on Peripheral and Hepatic Glucose Metabolism (1994)

Nir Barzilai, MD, Albert Einstein College of Medicine: The Effect of Age-Dependent Increase in Visceral Fat on Insulin Action and Secretion (1997)

Jacob Blumenthal, MD, University of Maryland: The Neuropeptide Y1-Y5 receptor and its Relationship to Obesity and Diabetes Mellitus (1999)

Cynthia M. Boyd, MD, MPH, Johns Hopkins University: Treatment Burden in Older Adults with Diabetes and Multi-morbidity (2009)

William T. Cefalu, MD, Wake Forest University: The Role of the Aging Process on Insulin Receptor Recycling In Vivo (1989)

Francesco S. Celi, MD, University of Maryland: Type 2 Deiodinase Mutations and Insulin Resistance in the Old Order of Amish (2002)

Itzik Cooper, PhD, Sheba Medical Center, Tel-Hashomer: The contribution of long term instability of glycemic control to hippocampal structure, function, and BBB disruption (2013)

Collin Ewald, PhD, Joslin Diabetes Center: The impact on aging of preferential translational of ATF-5 (2013)

Barry Gumbiner, MD, University of Rochester: Insulin Signal Transduction in Aging (1993)

Meredith Hawkins, MD, Albert Einstein College of Medicine: The Role of Nutrient Excess in Mediating the Insulin Resistance of Aging (2003)

Christina E. Hugenschmidt, PhD, Wake Forest University: Differential relationships between diabetes risk factors and brain structure and function (2012)

Meltem Isik, PhD, Joslin Diabetes Center: Investigation of TORC1-inhibition dependent SKN-1/Nrf activity and its effect on longevity (2013)

Krishnamurthy Janakiraman, PhD, University of North Carolina, Chapel Hill: Role of p16INK4a in islet regeneration with aging (2008)

Lyndon Joseph, University of Arkansas: Weight Loss, Exercise, and Age: Effects on Insulin Action (1998)

Jason Karpac, PhD, Buck Institute for Research on Aging: Antagonistic pleiotropy of IGF/insulin signaling and the control of metabolic homeostasis (2012)

Victoria P. Knutson, PhD, University of Texas Health Science Center at Houston: Effects of Aging on Insulin Receptor and Glucose Metabolism (1984)

Brett Lauring, MD, PhD, Columbia University College of Physicians and Surgeons: An in vitro assay for gamma secretase processing of the amyloid precursor protein (2000)

Sei J. Lee, MD, MAS, University of California, San Francisco: Individualizing Treatment for Nursing Home Residents with Diabetes (2011)

Charles V. Mobbs, PhD, Rockefeller University: A neuroendocrine mechanism potentially mediating effects of dietary restriction and glucose on age-correlated pathologies (1991)

Kathryn A. Moynihan, MD, Washington University in St. Louis: Deacetylation of the forkhead transcription factor FOX01 by mammalian Sir2a negatively regulates insulin gene expression in pancreatic b cells (2004)

Nicolas Musi, MD, University of Texas Health Science Center at San Antonio: Role of IKK/IkB/NFkB Signaling in Insulin Resistance in Aging Muscle (2007)

Radhika H. Muzumdar, MD, Albert Einstein College of Medicine: Role of declining IGF-1 in the metabolic syndrome of aging (2004)

Allyson Palmer, Mayo Clinic: Clearing Senescent Cells as Therapy for Diabetic Complications in db/db Mice (2015)

Riccardo Perfetti, MD, PhD, Cedars-Sinai Medical Center: Age-Dependent Decline of Pancreatic Islet Cell Function is Reversed by Hormonal Treatment (2000)

Pere Puigserver, PhD, Johns Hopkins University: Molecular Mechanisms for Transcriptional Regulation of glucose homeostasis linked to aging (2004)

Ramit Ravona-Springer, MD, Sheba Medical Center: Dietary factors, inflammation and cognitive decline in diabetic elderly (2011)


Steven J. Russell, MD, PhD, Harvard Medical School/ Joslin Diabetes Center: Adipocyte Insulin Signaling in Metabolism and Aging (2008)

Adam Salmon, PhD, University of Texas Health Science Center at San Antonio: Protein oxidation as a cause of age-associated insulin resistance (2013)

Alan R. Shuldiner, MD, University of Maryland: Obesity and diabetes susceptibility genes (1995)

Jian Yang, PhD, University of South Alabama: A Novel Genetic Mouse Model of Chronic Activation of AMP-Activated Protein Kinase (AMPK) in Liver (2007)