

Leadership. Innovation. Impact.

for a healthier future

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About the National Academy of Medicine

Founded in 1970 as the Institute of Medicine (IOM), the National Academy of Medicine (NAM) is one of three Academies that make up the National Academies of Sciences, Engineering, and Medicine (the National Academies) in the United States. Operating under the 1863 Congressional charter of the National Academy of Sciences, the National Academies are private, nonprofit institutions that work outside of government to provide objective advice on matters of science, technology, and health. Studies from the National Academies are often congressionally mandated or commissioned by government agencies, and their recommendations can have lasting impact on domestic and global policy.

Who We Are

An independent, evidence-based scientific advisor. The NAM is committed to applying scientific rigor and objective evidence to achieve balanced, authoritative solutions to complex challenges in health. To carry out our work, we harness the talents and expertise of accomplished, thoughtful volunteers and undertake meticulous processes to avoid and balance bias. Our foundational goal is to be the nation's most reliable source for credible scientific and policy advice on matters concerning human health.

A national academy with global scope. In this increasingly interconnected world, good health knows no borders. Although the National Academies were originally created to advise the U.S. government and advance the well-being of the U.S. population, our mandate is now much broader. The NAM includes members from across the globe and partners with organizations worldwide to address challenges that affect us all.

Committed to catalyzing action and achieving impact. We seek to identify and generate momentum around critical issues in health; marshal diverse expertise to build evidence-based solutions; inspire action through collaboration and public engagement; and foster the next generation of leaders and innovators.

Collaborative and interdisciplinary. In partnership with the National Academy of Sciences, the National Academy of Engineering, and other stakeholders, the NAM draws on expertise across disciplines and domains to advance science, policy, and practice in health, medicine, and their many intersecting fields. Reflecting our conviction that health impacts should be a consideration in all policy decisions, we lend health and medical expertise to the broader endeavors of the Academies, including work in social sciences and education, earth and life sciences, transportation, technology, and more.

An honorific society for exceptional leaders. The NAM has more than 2,000 U.S. and international members elected by their peers in recognition of outstanding achievement in health, medicine, and intersecting fields. Our members—nearly 50 of whom are Nobel laureates—are the architects of major scientific breakthroughs, policy leaders in the United States and abroad, exceptional care practitioners, and many of the brightest minds in academia. Through a commitment to volunteer service, NAM members help guide the work and advance the mission of the NAM and the National Academies.

An inscription near the entrance to the Keck Center, where more than 1,000 employees of the National Academies report to work every day, bears a quote from Albert Einstein: "The right to search for truth implies also a duty; one must not conceal any part of what one has recognized to be true."

I find it fitting that the dedicated staff of the National Academies of Sciences, Engineering, and Medicine pass this reminder every morning. Too often, our society casts science as a dry and passionless endeavor, a step removed from the world in which we operate on a daily basis.

This is wrong. Science, as Einstein put it so aptly, is the *search for truth*. Boundless curiosity, a drive to better understand our world, is central to our shared humanity and responsible for every technological advancement we enjoy today. This is why, I believe, Einstein refers to the pursuit of knowledge as a *right*.

Science cures diseases, lifts nations out of poverty, and breaks down false and harmful barriers between us. Science protects our families' health, our increasingly interconnected global populations, and our complex and fragile ecosystems. In short, science helps us reach our full potential, both as individuals and in the long trajectory of human progress. Therefore, we must understand science, and defend it, as a right.

Einstein further contends that, as scientists, we have a *duty*. Often, in the search for truth, we reach conclusions that counter a treasured hypothesis or political priority. In these cases, more than any other, we must be entirely open and transparent. Science is in danger when it becomes the instrument of an agenda. In other words, to preserve our right to scientific inquiry, we must protect its integrity.

The principle that science is both a right and a duty is at the heart of our mission at the National Academy of Medicine (NAM). In the current climate, where trust in the authority of established institutions seems to be eroding, this mission is more important than ever. However, while Einstein admonishes us not to "conceal" the truth, I contend that we, as leaders in the scientific community, must go a step further. We must actively promote understanding of science and the dissemination of evidence-based information that can improve people's lives.

In 2016, the NAM made important strides toward this goal with a sustained focus on field leadership, capacity building, and strategic planning. In the pages that follow, you'll find more detail on our special initiatives and ongoing programs—from advising the new presidential administration on priorities for health and health care to building a culture of health in every community in America.

In the year ahead, we will redouble our efforts to advise the nation and the world, to identify and respond to emerging challenges, to catalyze action and achieve impact, and to promote the importance of science wherever we go.



Victor J. Dzau, MD President

Organizational Chart

Leadership

President

Victor J. Dzau Chief of Staff: Morgan Kanarek Home Secretary
Jane E. Henney

Foreign SecretaryMargaret A. Hamburg

Leonard D. Schaeffer Executive Officer

J. Michael McGinnis

Operations

Communications

Laura DeStefano
Associate Director

Finance & Administration

Adrienne Anzanello Director

Council & Membership

Meg McCoy Director

Planning & Advancement

Kimber Bogard Senior Officer

Development

Julie Ische
Acting Director

Programs & Activities

Action Collaborative on Clinician Well-Being & Resilience (Charlee Alexander, Program Manager)

Culture of Health Program (Kimber Bogard, *Director*)

DC Public Health Case Challenge Emerging Leaders Forum (Meg McCoy, *Director*)

Global Health Risk Framework

Health Policy Educational Programs &
Fellowships (Marie Michnich, *Director*)

Healthy Longevity Grand Challenge (Elizabeth Finkelman, *Program Manager*)

Human Gene Editing Initiative (with the National Academy of Sciences)

Innovation to Incubation (Kimber Bogard, *Director*)

Leadership Consortium for a Value & Science-Driven Health System

(J. Michael McGinnis, Executive Director)

NAM Distinguished Lecture Series NAM *Perspectives*

Richard & Hinda Rosenthal Symposium Vital Directions for Health & Health Care (Elizabeth Finkelman, *Program Manager*)

2016-2017 NAM Council

The NAM is governed by a Council composed of NAM members elected by the membership.

Victor J. Dzau, MD, Chair

Tadataka Yamada, MD, Vice Chair

Venture Partner

Frazier Healthcare Partners

Margaret Hamburg, MD

Foreign Secretary

Jane E. Henney, MD

Home Secretary

Nancy E. Adler, PhD

Professor of Medical Psychology Director, Center for Health and Community University of California, San Francisco

Nancy Andrews, PhD, MD

Vice Chancellor and Dean Duke University School of Medicine

Sheila P. Burke, MPA, RN

Faculty Research Fellow Malcolm Weiner Center for Social Policy John F. Kennedy School of Government Harvard University

R. Alta Charo, JD

Warren P. Knowles Professor of Law & Bioethics School of Law School of Medicine and Public Health University of Wisconsin–Madison

Angela Diaz, MD, MPH

Jean C. and James W. Crystal Professor of Adolescent Health

Icahn School of Medicine at Mount Sinai

lack E. Dixon, PhD

Associate Vice Chancellor, Scientific Affairs Distinguished Professor University of California, San Diego

Mark C. Fishman, MD

Professor of Stem Cell and Regenerative Biology Harvard University

Elaine Fuchs, PhD

Investigator, Howard Hughes Medical Institute Laboratory Head of Mammalian Cell Biology and Development

The Rockefeller University

Lynn R. Goldman, MD, MPH

Dean, School of Public Health and Health Services Professor, Environmental and Occupational Health The George Washington University

Diane E. Griffin, MD, PhD

Distinguished University Service Professor Johns Hopkins Bloomberg School of Public Health

H. Robert Horvitz, PhD

Investigator, Howard Hughes Medical Institute Professor of Biology Massachusetts Institute of Technology

Steven E. Hyman, MD

Harvard University Distinguished Service Professor Director, Stanley Center for Psychiatric Research Broad Institute of MIT and Harvard

Raynard Kington, MD, PhD

President Grinnell College

Gilbert Omenn, MD, PhD

Professor of Computational Medicine and Bioinformatics, Internal Medicine, Human Genetics, and Public Health University of Michigan

J. Sanford (Sandy) Schwartz, MD

Leon Hess Professor of Medicine, Health Management and Economics

Perelman School of Medicine and Wharton School of Business

University of Pennsylvania

William W. Stead, MD

Associate Vice Chancellor for Health Affairs Chief Strategy Officer McKesson Foundation Professor of Biomedical Informatics and Medicine Vanderbilt University Medical Center

Keith R. Yamamoto, PhD

Vice Chancellor for Science Policy and Strategy
Vice Dean for Research, School of Medicine
Professor, Department of Cellular and Molecular
Pharmacology
University of California, San Francisco

Our Impact

In 2016, we committed to progress toward six major priorities:

- Providing expertise and guidance on U.S. and global policy on health and health care
- Identifying and responding to urgent and emerging challenges in health and medicine
- Leading and inspiring action around bold goals for health and medicine
- Eliminating health disparities, with a focus on population health and fostering environmental factors that promote good health
- Fostering interdisciplinary collaborative partnerships for innovation in health and medicine
- Recognizing and promoting excellence in health and medicine and fostering the next generation of leaders

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Vital Directions for Health & Health Care

As America's most trusted health advisor, the NAM is committed to identifying the most pressing health and medical challenges and informing health leaders and policy makers about effective, evidence-based solutions. To that end, the NAM launched Vital Directions for Health & Health Care to bring together leading experts from across the nation to identify the most promising opportunities to improve health and health care in the United States. The initiative was formed in anticipation of a new presidential administration and with the recognition that, despite significant advancements, the nation still faces critical health challenges.

By design, Vital Directions is not a consensus study. To rapidly and effectively inform an uncertain, post-election policy environment, an innovative, dynamic, and flexible process was required. To meet this need, the NAM commissioned more than 150 of the country's most respected experts to assess 19 prominent issue areas and recommend priority actions to achieve measurable progress in each. These recommendations were published in a series of peer-reviewed papers as NAM *Perspectives* and in the *Journal of the American Medical Association*.

In September 2016, the NAM held a public symposium to collect stakeholder feedback to inform the Vital Directions steering committee's final summary publication. This final paper, published in March 2017, presents a streamlined framework of four key action priorities and four essential infrastructure needs for achieving better health and well-being, high-value health care, and strong science and technology.

A central message emerging from the Vital Directions initiative is that policy makers and health leaders need to rise above partisan policy debates and focus on fundamental priorities necessary to improve health in America. The NAM has met extensively with members of Congress and the executive branch, and is reaching out to policy makers and stakeholders at all levels to make them aware of the Vital Directions framework and the resources available to them through the National Academies. The NAM will continue to build awareness and facilitate action around the Vital Directions framework throughout 2017. Access the complete collection of Vital Directions resources at nam.edu/VitalDirections.

Vital Directions Steering Committee

Victor J. Dzau, MD, NAM (Co-Chair)

Mark McClellan, MD, PhD, Duke Margolis Health
Policy Center (Co-Chair)

Sheila Burke, MPA, RN, Harvard Kennedy School **Molly J. Coye, MD**, AVIA

Hon. Thomas Daschle, The Daschle Group Angela Diaz, MD, MPH, Mount Sinai School of Medicine

Hon. William Frist, MD, Vanderbilt University Martha E. Gaines, JD, LLM, University of Wisconsin Law School

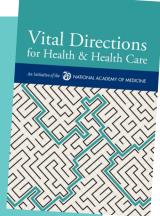
Margaret Hamburg, MD, NAM Jane Henney, MD, NAM **Shiriki Kumanyika, PhD, MPH,** University of Pennsylvania

Hon. Michael O. Leavitt, Leavitt Partners Ruth Parker, MD, Emory University School of Medicine

Lewis Sandy, MD, UnitedHealth Group **Leonard D. Schaeffer**, University of Southern California

Glenn D. Steele, Jr., MD, PhD, xG Health Solutions

Pamela Thompson, MS, RN, American Hospital Association (ret.) Elias Zerhouni, MD, Sanofi



Clinician Well-Being & Resilience

Every year in the United States, about 400 physicians take their own lives—a rate more than double that of the general population. Physicians experience high rates of depression, burnout, and poor work-life balance. This phenomenon cuts across all ages, stages, and career paths—from trainees to senior practitioners. And these challenges are not unique to physicians. Nurses and other clinicians experience similar effects on performance, health, and well-being.

Bottom line: The people we rely on to keep us healthy may not be healthy themselves. This fact is not only worrying in and of itself—it also has serious implications for patients. Clinician burnout has been linked to increased medical errors and patient dissatisfaction. In short, the health of our nation requires that our clinician workforce is healthy, resilient, and functioning at its highest capacity.

Recognizing the breadth and urgency of this issue, the National Academy of Medicine launched a first-of-its-kind Action Collaborative on Clinician Well-Being and Resilience in December 2016. Chaired by NAM president Victor J. Dzau and co-chaired by Darrell Kirch, president and CEO of the Association of American Medical Colleges, and Thomas Nasca, CEO of the Accreditation Council for Graduate Medical Education, the Collaborative will work to improve clinician well-being and resilience through a dynamic network of more than 50 national organizations, including clinician and consumer groups as well as health care organizations and policy-making bodies. In particular, the Collaborative will work to (1) assess and understand the underlying causes of clinician burnout and suicide, and (2) advance solutions that reverse negative trends in clinician well-being. Activities of the Collaborative will include literature reviews, creation of a knowledge-sharing hub, public workshops, a strategic communications campaign, and a possible consensus study.

For more information and to get involved: nam.edu/ClinicianWellBeing



"Emotional well-being is not just about the absence of mental illness. It's about our ability to achieve our full potential. That's extremely important for everyone, and particularly for clinicians."

—Former U.S. Surgeon General Vivek H. Murthy at the inaugural meeting of the NAM Action Collaborative on Clinician Well-Being & Resilience

Healthy Longevity Grand Challenge

In a new initiative currently in its planning stages, the NAM will seek to make breakthroughs in healthy longevity by catalyzing innovation and scientific progress through challenge prizes and awards. The Healthy Longevity Grand Challenge

is the inaugural entry in the NAM's Grand Challenges in Health and Medicine program.

Human beings are living longer than ever before, thanks to dramatic advances in medicine, public

health, and economic and social progress. Exciting innovations in science and technology have potential to improve quality of life as we age, and even extend the lifespan. We can envision—just on the horizon—an explosion of potential new medicines, treatments, technologies, and preventive strategies that

could help revolutionize the way we age. It has never been more urgent to support the next breakthroughs in healthy longevity.

The Healthy Longevity Grand Challenge will aim to inspire and incubate transformative ideas

> through challenge prizes and awards, expert guidance, and public engagement. Oversight for the program will be provided by the NAM's governing Council, a design committee, and a selection committee. The NAM is seeking



For more information and to get involved: nam.edu/HealthyLongevity



Challenge Design Committee

Nancy Adler, PhD, University of California, San Francisco Keith Powers, Engaged Partners; Powerful Concepts, Mark C. Fishman, MD, Harvard University Diane E. Griffin, MD, PhD, Johns Hopkins Bloomberg School of Public Health

Marc Hodosh, Co-Creator, TEDMED

Edward W. Holmes, MD, Sanford Consortium for Regenerative Medicine

Robert Horvitz, PhD, Howard Hughes Medical Institute and Massachusetts Institute of Technology

LLC; and Start Up Maui!

Jack Rowe, MD, Columbia University Mailman School of Public Health

Mark Walport, FRS, FRCP, FRCPath, FMedSci, UK Government Chief Scientific Advisor

Tachi Yamada, Frazier Healthcare Partners



Culture of Health Program

Individual health is shaped by many economic and social factors, such as income, education, access to high-quality health care, geography, and race and ethnicity. Uneven access to conditions that are needed for good health across the United States has been well documented, as have the poor effects on health that result—not only for individuals but also for their families and society.

The NAM's Culture of Health Program, funded by the Robert Wood Johnson Foundation, is a multiyear collaborative effort to identify strategies to create and sustain conditions that support equitable good health for all Americans. In January 2017, the National Academies released the first in a series of consensus studies from the program: Communities in Action: Pathways to Health Equity. The report concluded that system-level changes are needed to reduce poverty, eliminate structural racism, lessen income inequality, increase educational opportunity, and mitigate laws and policies that perpetuate structural inequities. All actors in society—residents and community-based organizations, in partnership with businesses, state and local government, anchor and faith-based institutions—have an important role to play in promoting health equity and building a culture of health.

To disseminate findings from the Communities in Action report and continue to foster public engagement around the concepts of health equity and the social determinants of health, the NAM will undertake a major outreach and relationship-building campaign throughout 2017. The campaign will include interactive stakeholder meetings, a community listening tour, tailored digital tools, a community health video and interview series, and a long-term project to "incubate" action at the community level, among other activities. Planning is also under way for additional consensus studies. To become involved in our Culture of Health activities, please visit nam.edu/CultureofHealth.





Human Gene Editing Initiative

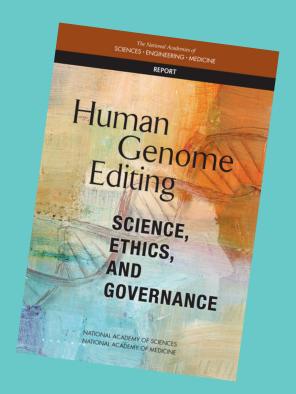
In February 2017, as part of the ongoing NAM/ National Academy of Sciences (NAS) Human Gene Editing Initiative, the NAM and NAS released the landmark consensus report Human Genome Editing: Science, Ethics, and Governance. The report was authored by a diverse committee of experts from around the world, including representatives from Canada, China, Egypt, France, Israel, Italy, and the United Kingdom. The committee, co-chaired by NAM member Alta Charo and NAM/NAS member Richard Hynes, assessed existing literature and met with stakeholders to generate recommendations for governance and scientific development and create an ethical framework to guide international use of this rapidly-developing technology.

The committee found that clinical trials for genome editing of the human germline adding, removing, or replacing DNA base pairs in gametes or early embryos—could be permitted in the future, but only for serious conditions under stringent oversight, as outlined in the report. The committee also noted that policy making surrounding human genome editing applications should incorporate public participation, and that funding of genome editing research should include support to study the sociopolitical, ethical, and legal aspects and evaluate efforts to build public communication and engagement on these issues. The report was met with broad interest from the international media. The NAM and NAS are also continuing to engage policy makers, industry representatives, scientists, disease advocacy communities, and members of the public around issues raised in the report.

Previously, the Human Gene Editing Initiative gathered more than 500 scientists and ethicists from around the world at an International Summit co-hosted by the NAM, NAS, the Chinese Academy of Sciences, and the United Kingdom's Royal Society. The summit marked the first time nations had gathered to discuss human gene editing in a collaborative forum.

The Human Gene Editing Initiative has built an ongoing, dynamic network across national and disciplinary boundaries that is likely to set the tone for future developments in the development and use of this technology. Planning for follow-on summits in China and the United Kingdom is under way for coming years.

For more information: **nationalacademies. org/Gene-Editing.**





Prizes & Awards

The Rhoda and Bernard Sarnat International Prize in Mental Health was established in 1992 by Rhoda and Bernard Sarnat out of their commitment to improving the science base and delivery of mental health services. This international award recognizes individuals, groups, or organizations for outstanding achievement in improving mental health and is accompanied by a medal and \$20,000. The 2016 Sarnat Prize was presented to **Steven Hyman**, **MD**, of the Broad Institute for his leadership in furthering understanding and treatment of psychiatric disorders as biological diseases; and to Sir Robin Murray, FRS, of Kings College London for his work integrating the biological, environmental, and social aspects of schizophrenia and thereby improving the lives of patients and families. More information and to nominate: nam.edu/Sarnat

The Gustav O. Lienhard Award for Advancement of Health Care, established in 1986, is presented by the NAM annually in honor of Gustav O. Lienhard, Chairman of the Robert Wood Johnson Foundation's (RWJF's) Board of Trustees from 1971 to 1986. The award—a medal and \$40,000—recognizes individuals for outstanding achievement in improving health care services in the United States. Support for the award is provided by RWJF. The 2016 Lienhard Award was presented to **David Cella**, **PhD**, of Northwestern University Feinberg School of Medicine for his pioneering work to measure and apply patient-reported outcomes in health care. More information and to nominate: nam.edu/ Lienhard

Emerging Leaders Forum

The Emerging Leaders Forum was established in 2016 to increase the NAM's engagement with exceptional early-career professionals working in biomedical science, health care delivery, health policy, and related fields. The forum facilitates opportunities for mentorship, collaboration, and innovation among the emerging leaders,

NAM members, and experts across sectors. Forum members also provide valuable input and feedback to help shape NAM priorities and sustain the Academy's impact and reputation as a national leader in advancing knowledge and accelerating progress in science, medicine, policy, and health equity.

2017-2018 Membership Roster

Diedra C. Crews, MD, ScM, Johns Hopkins University School of Medicine; Lori Freedman, PhD, University of California, San Francisco; Christopher Friese, PhD, RN, AOCN, FAAN, University of Michigan School of Nursing; Sandeep Kishore, MD, PhD, MSc, Icahn School of Medicine at Mount Sinai; Margaret (Gretchen) L. Schwarze, MD, MPP, University of Wisconsin; Julie Segre, PhD, National Human Genome Research Institute; Kimberly Snyder, MPH, FDA Center for Tobacco Products; Sohail Tavazoie, MD, PhD, The Rockefeller University; Y. Claire Wang, MD, ScD, MS, Columbia University Mailman School of Public Health; Joseph C. Wu, MD, PhD, Stanford University School of Medicine; Ramnik Xavier, MD, ChB, Massachusetts General Hospital, Harvard Medical School, and Broad Institute

Leadership Consortium for a Value & Science-Driven Health System

The Leadership Consortium is comprised of national leaders and innovators from major stakeholder sectors and organizations who share a common commitment to transformational progress in the effectiveness and value of health care, attainment of a health system that continuously learns and improves, and better health for all Americans. The Leadership Consortium works through the activities of its member organizations, as well as through four Innovation Collaboratives and two leadership networks. Each Innovation Collaborative is devoted to stewarding and facilitating cooperative projects and shared energies on the issues most important for advancing science and value in health and health care.

Innovation Collaboratives

Care Culture and Decision Making Clinical Effectiveness Research Digital Learning Value Incentives and Systems Innovation

Networks

Patient and Family Leadership Network Executive Leadership Network for a Continuously Learning Health System

Membership Roster

Mark B. McClellan, MD, PhD (Chair), Duke-Margolis Center for Health Policy; David Blumenthal, MD, MPP, The Commonwealth Fund; Susan DeVore, MS, Premier, Inc.; Judith Faulkner, MS, Epic Systems; David T. Feinberg, MD, MBA, Geisinger Health System; Joseph J. Fifer, FHFMA, CPA, Healthcare Financial Management Association; Patricia A. Gabow, MD, MACP, Denver Health (formerly); Atul **Gawande, MD, MPH,** Ariadne Labs, Brigham & Women's Hospital, and Harvard School of Public Health; Julie L. Gerberding, MD, MPH, Merck & Co., Inc.; Paul Grundy, MD, MPH, FACOEM, FACPM, IBM; Brent C. James, MD, MStat, Intermountain Healthcare; Gary Kaplan, MD, Virginia Mason Health System; Gregory F. Keenan, MD, AstraZeneca; Darrell G. Kirch, MD, Association of American Medical Colleges; Richard E. Kuntz, MD, MS, Medtronic; Peter Long, PhD, Blue Shield of California Foundation; James L. Madara, MD, American Medical Association; Mark E. Miller, PhD, MedPAC; Ameet Nathwani, MD, Sanofi US; Mary D. Naylor, PhD, RN, University of Pennsylvania; William D. Novelli, MA, Georgetown University and Coalition to Transform Advanced Care; Sally Okun, RN, MMHS, PatientsLikeMe; Harold Paz, MD, MS, Aetna; Jonathan B. Perlin, MD, PhD, HCA, Inc.; Richard Platt, MD, MS, Harvard Medical School; Richard J. Pollack, MPA, American Hospital Association; Peter J. Pronovost, MD, PhD, FCCM, Johns Hopkins Medicine; Murray N. Ross, PhD, Kaiser Permanente; John W. Rowe, MD, Columbia University; Craig E. Samitt, MD, MBA, FACP, Anthem, Inc., Lewis G. Sandy, MD, UnitedHealth Group; Leonard D. Schaeffer, University of Southern California; Joe Selby, MD, MPH, Patient-Centered Outcomes Research Institute; Mark D. Smith, MD, MBA, California Health Care Foundation; Jennifer Taubert, MBA, Johnson & Johnson; Marta Tellado, MA, PhD, Consumers Union; Reed V. Tuckson, MD, Tuckson Health; Debra B. Whitman, PhD, MA, AARP; Leadership in Transition, Association of Schools and Programs of Public Health. Ex-Officio: Poonam Alaigh, MD, MSHCPM, FACP, Department of Veterans Affairs; Sharon Arnold, PhD, Agency for Healthcare Research and Quality; Francis Collins, MD, PhD, National Institutes of Health; James Macrae, MA, MPP, Health Resources & Services Administration; Stephen Ostroff, MD, Food and Drug Administration; Anne Schuchat, MD, Centers for Disease Control and Prevention; David J. Smith, MD, Department of Defense; Seema Verma, MPH, Centers for Medicare & Medicaid Services; Don Wright, MD, MPH, Department of Health & Human Services.

Health Policy Educational Programs and Fellowships

The NAM's Health Policy Educational Programs and Fellowships enrich the experience of early-and mid-career professionals and foster the next generation of health and medical leaders. These programs provide outstanding scientists, scholars, and practitioners a role in health policy development on a national scale. In turn, these exceptional individuals act as ambassadors for evidence-based decision making in policies that affect the health of all Americans.

Robert Wood Johnson Foundation Health Policy Fellows—2016-2017 Class

Daryll Dykes, MD, JD, PhD, Medical and Surgical Spine Consultants of Minnesota, PLLC Elena Elkin, PhD, MPA, Memorial Sloan Kettering Cancer Center and Weill Cornell Medical College Christopher Friese, PhD, RN, AOCN, FAAN, University of Michigan School of Nursing Christine Gleason, MD, University of Washington, Seattle Susie Nanney, PhD, MPH, RD, University of Minnesota Josephine Nguyen, MD, Uniformed Services University of the Health Sciences Daniel Ochylski, DNP, MS, RN, Independent Nursing Services Inc. Punam Ohri-Vachaspati, PhD, RD, Arizona State University

FDA Tobacco Regulatory Science Fellowship—2016 Class and Placements Within the Center for Tobacco Products at the Food and Drug Administration

Babita Das, PhD, Office of Science Alison Kulas, MSHP, Office of Health Communication and Education Dana Lauterstein, PhD, Office of Science Michelle Snortland, MBA, Office of Compliance and Enforcement

NAM Fellowship

Jennie H. Kwon, DO, NAM Fellow in Osteopathic Medicine, 2016-2018 Sean C. Lucan, MD, MPH, James C. Puffer, MD/American Board of Family Medicine Fellow, 2016-2018

Jonathan H. Watanabe, PharmD, PhD, NAM Fellow in Pharmacy, 2016-2018

James F. Burke, MD, MS, Gilbert S. Omenn Fellow, 2015-2017

Brendan Saloner, PhD, Greenwall Fellow in Bioethics, 2015-2017

Hanni Stoklosa, MD, MPH, American Board of Emergency Medicine Fellow, 2015-2017

Brownsyne M. Tucker, MD, MPH, MS, Norman F. Gant/American Board of Obstetrics and Gynecology Fellow, 2015-2017



Above: American Board of Emergency Medicine Fellow Hanni Stoklosa addresses NAM members at the 2016 Annual Meeting.

Innovation to Incubation

Innovation to Incubation (i2I) champions innovative ideas and cultivates pathways to action to increase the NAM's impact on the future of health and health care. i2I leverages the NAM's long-standing role as a neutral convener to build productive networks, facilitate cross-sector collaboration, and assemble resources around emerging needs and existing priorities. In 2016, i2I continued an ongoing "incubation" project to facilitate state-level action around recommendations from the 2015 report *Transforming the Workforce for Children Birth Through Age 8: A Unifying Foundation.* Thus far, the project has assembled 8 state teams and more than 30 national organizations to build networks and provide technical assistance as plans are developed. Other current i2I projects include the development of an edited volume of papers focusing on the intersection of health equity and social justice.

Richard & Hinda Rosenthal Symposium

For more than 25 years, the NAM has hosted an annual symposium to bring greater attention to critical health issues worldwide. Starting in 2016, the Rosenthal Symposium will be held outside Washington, DC, to increase its reach and impact. The 2016 symposium was co-hosted with the University of Washington in Seattle and focused on "Precision Population Health," with a keynote by Susan Desmond-Hellmann of the Bill & Melinda Gates Foundation.

DC Public Health Case Challenge

The DC Public Health Case Challenge aims to promote interdisciplinary, problem-based learning around a public health issue that faces the Washington, DC, community. Local university teams are given a case, written by students from participating universities, that provides background information on a local public health problem. Teams then have a limited amount of time to devise a comprehensive intervention, which they present to an expert panel of judges. The 2016 case was "The Changing American City and Implications for Health and Well-Being of Vulnerable Populations." The team from George Washington University took home the Grand Prize, while Howard University and Uniformed Services University of the Health Sciences each won a Practicality Prize, and American University received the Harrison C. Spencer Interprofessional Prize.

Below: Participants in the 2016 Challenge.



Member Spotlight

The NAM has approximately 2,100 members selected in recognition of distinguished professional achievement and the commitment to protecting and advancing health through volunteer service in the activities of the NAM and other groups in the Academies. Each year, NAM members elect 70 U.S. members and up to 10 international members to join their ranks from a large pool of exceptional nominees. Election to the NAM reflects the respect and admiration that individuals have earned from their peers in the fields of health and medicine and other related disciplines. *Below: Members of the Class of 2015*



Members Elected in 2016

- **Anissa Abi-Dargham, MD,** Stony Brook University and Columbia University
- Anita Allen, JD, PhD, University of Pennsylvania Maria Jose Alonso, PharmD, PhD, University of Santiago de Compostela, Spain
- Masayuki Amagai, MD, PhD, Keio University School of Medicine and RIKEN Center for Integrative Medical Sciences, Japan.
- Cheryl Ann Marie Anderson, PhD, MPH, MS, University of California, San Diego
- **Peter Brian Bach, MD, MAPP,** Memorial Sloan Kettering Cancer Center
- **Bonnie L. Bassler, PhD,** Howard Hughes Medical Institute and Princeton University
- **Andrew William Bazemore, MD, MPH,** Robert Graham Center for Policy Studies in Family Medicine and Primary Care
- Per-Olof Berggren, PhD, Karolinska Institute, Sweden Karen Faith Berman, MD, National Institute of Mental Health Intramural Research Program, National Institutes of Health
- **Stefano Bertozzi, MD, PhD,** University of California, Berkeley
- **Leslie Glenn Biesecker, MD,** National Human Genome Research Institute, National Institutes of Health
- Agnes Binagwaho, MD, PhD, Harvard Medical School Antonello Bonci, MD, National Institute on Drug Abuse, National Institutes of Health
- Malcolm K. Brenner, MA, MB, BChir, PhD, FRCP, FRCPath, Baylor College of Medicine
- L.D. Britt, MD, MPH, Eastern Virginia Medical School Deborah Watkins Bruner, RN, PhD, FAAN, Emory University and Fox Chase Cancer Center
- Robert M. Califf, MD, Duke University
- Alicia Laura Carriquiry, PhD, lowa State University Laura L. Carstensen, PhD, Stanford University
- Andrea L. Cheville, MD, MSCE, Mayo Clinic
- **Anne Louise Coleman, MD, PhD,** University of California, Los Angeles
- **Kathleen Loretta Collins, MD, PhD,** University of Michigan
- Roger D. Cone, PhD, University of Michigan Martha A.Q. Curley, RN, PhD, FAAN, University of Pennsylvania
- **Joseph L. DeRisi, PhD,** University of California, San Francisco, and Chan Zuckerberg Biohub
- Francis J. Doyle III, PhD, Harvard University
- **Karen M. Emmons, PhD,** Harvard T.H. Chan School of Public Health
- **Elissa Sarah Epel, PhD,** University of California, San Francisco
- **Timothy G. Evans, DPhil, MD,** World Bank Group **Carol Friedman, PhD,** FACMI, Columbia University

- **Christopher Garcia, PhD,** Howard Hughes Medical Institute and Stanford University School of Medicine
- Patricia J. Garcia, MD, MPH, PhD, Minister of Health for Peru
- Carmen García-Peña, MD, MSc, PhD, National Institute of Geriatrics, Mexico
- Martin Gaynor, PhD, Carnegie Mellon UniversityMaura Lianne Gillison, M.D., Ph.D., Ohio State University
- **Alison M. Goate, DPhil,** Icahn School of Medicine at Mount Sinai
- Sarah Jane Halton, BA (Hons), University of Canberra, Australia
- Paula Therese Hammond, PhD, Massachusetts Institute of Technology
- Stanley L. Hazen, MD, PhD, Cleveland Clinic Mukesh K. Jain, MD, Case Western Reserve University Maria Jasin, PhD, Memorial Sloan Kettering Cancer Center
- **Prabhat Jha, OC, MD, DPhil, FCAHS,** University of Toronto, Canada
- Jeffrey P. Kahn, PhD, MPH, Johns Hopkins University Melina Rae Kibbe, MD, University of North Carolina, Chapel Hill
- Allan Douglas Kirk, MD, PhD, FACS, Duke University Mark A. Krasnow, MD, PhD, Howard Hughes Medical Institute and Stanford University School of Medicine
- Francis S. Lee, MD, PhD, Weill Cornell Medicine

 Jake Liang, MD, National Institute of Diabetes and
 Digestive and Kidney Diseases, National Institutes of
 Health
- **Maureen Lichtveld, MD, MPH,** Tulane University School of Public Health and Tropical Medicine
- **George A. Macones, MD, MSCE,** Washington University School of Medicine, St. Louis
- Kelsey Catherine Martin, MD, PhD, University of California, Los Angeles
- **Donald P. McDonnell, PhD,** Duke University School of Medicine,
- **Bruce L. Miller, MD,** University of California, San Francisco
- **Samir Mitragotri, PhD,** University of California, Santa Barbara
- Valerie Montgomery Rice, MD, Morehouse School of Medicine
- John H. Morrison, PhD, University of California, Davis Mark A. Musen, MD, PhD, Stanford University School of Medicine
- K.M. Venkat Narayan, MD, MSc, MBA, Emory University
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Lynne Doreen Richardson, MD, Icahn School of Medicine at Mount Sinai

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Paul Bennett Rothman, MD, Johns Hopkins University and Johns Hopkins Medicine

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Jane E. Salmon, MD, Weill Cornell Medicine and Hospital for Special Surgery

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Tadatsugu Taniguchi, PhD, University of Tokyo and Max Planck-University of Tokyo Center for Integrative Inflammology, Japan Hugh Smith Taylor, MD, Yale School of Medicine Oyewale Tomori, DVM, PhD, Redeemer's University, Nigeria

Craig Venter, PhD, J. Craig Venter Institute and Human Longevity Inc.

Cheryl Lyn Walker, PhD, Baylor College of Medicine **David Walt, PhD,** Tufts University

Huntington Faxon Willard, PhD, Howard Hughes Medical Institute, Marine Biological Laboratory, and University of Chicago

Michelle A. Williams, ScD, Harvard T.H. Chan School of Public Health

Xiaoliang Sunney Xie, PhD, Harvard University Clyde W. Yancy, MD, Northwestern University Michael Jerome Yaszemski, MD, PhD, Mayo Clinic

SELECT MEMBER ACHIEVEMENTS IN 2016

William G. Kaelin, Jr., of Harvard Medical School and **Gregg L. Semenza** of Johns Hopkins University School of Medicine, both members of the NAM and NAS, won the 2016 **Albert Lasker Basic Medical Research Award** "for their discovery of the pathway by which cells from humans and most animals sense and adapt to changes in oxygen availability—a process essential for survival." Peter J. Ratcliffe also shared the prize.

In 2016, the White House recognized the winners of the National Medal of Science of the National Medal of Technology and Innovation, which are the nation's highest honors for achievement and leadership in advancing the fields of science and technology. Seven NAM members were honored:

National Medal of Science

Albert Bandura, Stanford University **Stanley Falkow,** Stanford University School of Medicine **Rakesh K. Jain,** Harvard Medical School and Massachusetts General Hospital

Mary-Claire King, University of Washington

National Medal of Technology and Innovation

Joseph DeSimone, University of North Carolina at Chapel Hill, North Carolina State University, and Carbon3D Mark Humayun, University of Southern California Cato T. Laurencin, University of Connecticut



Member Awards

Every year, NAM members vote to recognize three of their peers for exceptional service to the NAM and the National Academies.



The **Walsh McDermott Award** recognizes an NAM member for distinguished service over an extended period of time. The 2016 medal went to **Lynn Goldman**, dean and professor of environmental and occupational health at the Milken Institute School of Public Health at The George Washington University, for her nearly 30-year history of volunteer service. "I can't think of anything I've done for the National Academies where I haven't left with not only more knowledge about the subject area, but also a completely different appreciation for how to look at a question, how to work with a group, or how to interpret a set of findings," Goldman said of her service.



The **David Rall Award** recognizes an NAM member who has demonstrated distinguished leadership as chair of a study committee or other activity, showing commitment above and beyond the usual responsibilities of the position. The 2016 medal went to **Donna Shalala**, president of the Clinton Foundation and trustee professor of political science and health policy at the University of Miami, for her chairmanship of the committee that produced the landmark report *The Future of Nursing: Leading Change, Advancing Health.* "The number 1 reason the report was so successful was timing," Shalala said. "The nursing profession was ready to take a larger and larger role."



The **Adam Yarmolinsky Award** recognizes exceptional service by an NAM member whose discipline falls outside the traditional health and medical fields. By institutional requirement, at least one-quarter of the NAM membership meets this criterion. The 2016 medal went to **Mary Woolley,** president and CEO of Research!America, for her record of distinguished service to the National Academies. "Research doesn't happen in a vacuum. Health care doesn't happen in a vacuum. There is an important context, and that's the genius of the Academy's requirement to elect members from outside the health sciences," Woolley said.

2016 ANNUAL MEETING

The scientific program of the 2016 Annual Meeting was titled "Reversing the Dramatic, 30-Year Rise in Obesity and Type 2 Diabetes." Margaret Chan, director general of the World Health Organization, delivered a keynote outlining a global perspective on the issue, and William H. Dietz, chair of the Sumner M. Redstone Global Center for Prevention and Wellness at The George Washington University, presented a keynote on U.S. patterns and disparities. Three scientific panels followed on drivers of obesity and type 2 diabetes, promising new approaches to clinical interventions, and evidence for strategies at the population level. The meeting closed with a special panel on the NAM's Vital Directions for Health & Health Care Initiative, featuring remarks from Senator Tom Daschle, Risa Lavizzo-Mourey of the Robert Wood Johnson Foundation, Governor Mike Leavitt, Mark McClellan of Duke University, and Larry Tabak of the National Institutes of Health. More than 1,000 people, including NAM members and the public, participated in the program—a record-high number. Videos and slides are available at nam. edu/AnnualMeeting2016

The 2017 Annual Meeting will take place October 15-16, 2017. The scientific program will focus on "Developmental Neurosciences: Do We Know Enough to Prevent or Reverse Major Behavioral Disorders?" Registration will open in July 2017.

Below: NAM members Tachi Yamada, Peggy Hamburg, Victor Dzau, and Al Reece with Margaret Chan at the 2016 Annual Meeting.

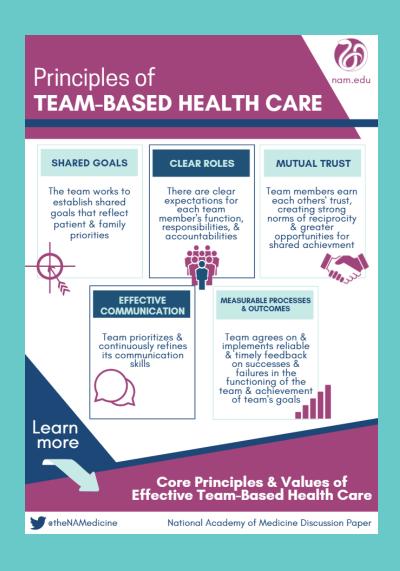


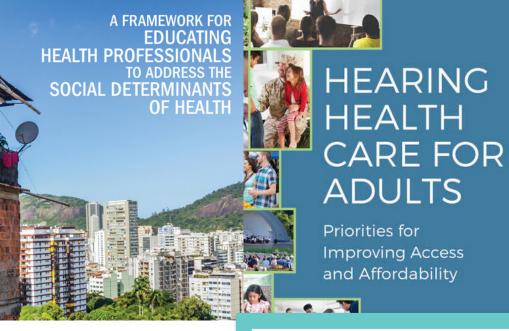
PUBLICATIONS

The NAM *Perspectives* platform extends the National Academies' convening and advising functions by providing a venue for leading health, medical, science, and policy experts to share information and identify opportunities for collaboration. *Perspectives* are individually-authored papers that do not reflect consensus positions of the NAM, the National Academies, or the authors' organizations. *Perspectives* impact the field by spotlighting innovative ideas, sharing expertise and best practices, and promoting dialogue and collaboration among stakeholders. They are frequently cited in media and academic publications, are often adopted in course materials or organizational toolkits, and are the #1 driver of traffic to NAM.edu.

In 2016, the NAM published 70 new *Perspectives*. The top 10 most-read *Perspectives* of 2016 are ranked below. See them all at nam.edu/Perspectives.

- Core Principles & Values of Effective Team-Based Health Care
- Health and Medical Response to Active Shooter and Bombing Events
- Ten Attributes of Health-Literate
 Health Care Organizations
- Breaking the Culture of Silence on Physician Suicide
- Considerations for a New Definition of Health Literacy
- An Environmental Scan of Recent Initiatives Incorporating Social Determinants in Public Health
- Beyond Survival: The Case for Investing in Young Children Globally
- Information Technology
 Interoperability and Use for
 Better Care and Evidence: A Vital
 Direction for Health & Health Care
- Addressing Social Determinants of Health & Health Disparities: A Vital Direction for Health & Health Care
- Advancing the Health of
 Communities & Populations: A
 Vital Direction for Health & Health
 Care



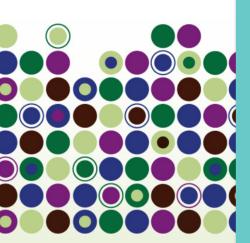


SPEECH AND LANGUAGE

The National Academies of SCIENCES · ENGINEERING · MEDICINE



Mitochondrial Replacement Techniques ETHICAL, SOCIAL, AND POLICY CONSIDERATION



The National Academies of Sciences, Engineering, and Medicine published more than two dozen consensus reports on health, medicine, science, and policy in 2016.

Find them online at nationalacademies.org.

Finding a Path to afety in Food Allergy

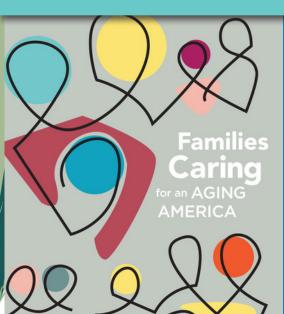
Assessment of the Global Burden, Causes, Prevention, Management, and Public Policy



A NATIONAL TRAUMA CARE **SYSTEM**

Integrating Military and Civilian Trauma Systems to Achieve

Preventable DEATHS After Injury



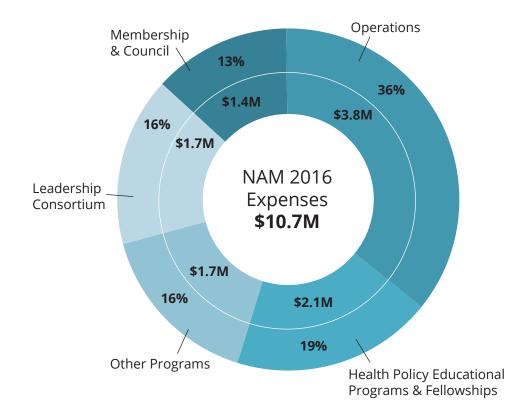
Parenting



Finances

A general overview of NAM Finances (expenses and revenue) follows. Fiscal year 2016 (January–December 2016) marks the first full year of operations after the Institute of Medicine became the National Academy of Medicine.

The NAM budget supports two main areas of activity—*General Operations* (reflected in the chart below as Operations and Membership and Council) and *Program. General Operations* includes Executive Office activities as well as Development, Communications, Finance, Program Development, Council and Membership Services, and a share of joint National Academies expenses. *Program* includes ongoing programs such as the Health Policy Educational Programs and Fellowships and the Leadership Consortium for a Value and Science-Driven Health System, as well other programs such as Culture of Heath, Global Health Risk Framework, Innovation to Incubation, DC Public Health Case Challenge, and NAM Awards.

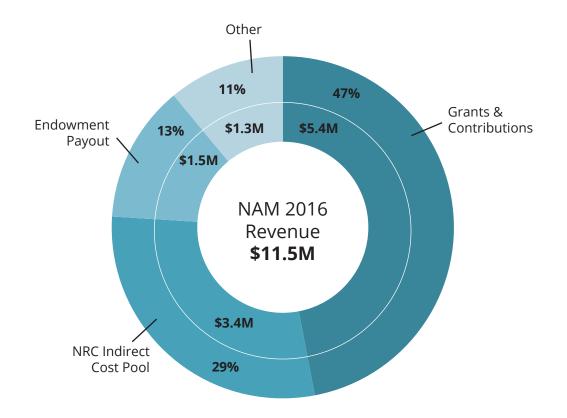


51% of expenses are dedicated to supporting programs.

36% of expenses support executive activities, including the President's Office and Executive Offices, Development, Foreign Secretary, and Home Secretary.

13% of expenses support membership and NAM Council activities.

NAM staff totaled **26** at the close of fiscal year 2016, with an additional **4** positions in active recruitment.



29% of revenue is from the indirect cost pool of the National Research Council (NRC), the primary source of funds supporting operations.

13% of revenue is from the endowment payout, which supports both operations and programs.

1.5% of NAM revenue was from the federal government in the form of a multi-year grant supporting the Tobacco Regulatory Science Fellowship.

\$797K revenue will be carried into future years.

Donor Recognition

The National Academy of Medicine extends its sincere gratitude for the generous support received from the many members, friends, staff, and philanthropic organizations that supported our work in 2016. Your gifts and grants help the NAM lead, innovate, and impact the future of health and health care. From fellowship opportunities that nurture the next generation of health and medical leaders, to advising policy makers about the path forward for health care reform, the NAM relies on philanthropic resources to undertake its many projects and activities.

During 2016, \$5,177,252 was raised from philanthropic sources. The scope and impact of these gifts and grants are significant. Highlights from the year include:

- 495 members and 16 friends of the NAM contributed \$485,577 to the annual fund, a 16% increase over 2015. An additional \$48,160 was received in support of the Harvey V. Fineberg Impact Fund. Included in the funds raised is a special challenge to the NAM Class of 2015. NAM member Ronald Miller (class of 1998) matched all gifts received from these new members which yielded \$23,575 from 35 new members.
- The NAM received \$685,000 to support Vital Directions in Health and Health Care, a project to provide advice to the new U.S. presidential administration and other policy leaders about next steps in health care reform. Funds were received from the California Endowment,
 Commonwealth Fund, John A. Hartford Foundation, Robert Wood Johnson Foundation, Josiah Macy, Jr. Foundation, and the Gordon and Betty Moore Foundation.
- The NAM Action Collaborative on Clinician Well-Being and Resilience received support of \$450,000 from a consortium of medical academies and associations. The funds raised will launch a set of collaborative activities, grounded in evidence-based knowledge to assess and understand the underlying causes of clinician burnout and suicide, and advance solutions that reverse the trends in clinician stress, burnout, and suicide.
- A grant of \$732,286 was received from the **Gordon and Betty Moore Foundation** to support Interoperability of Health Data and the Digital Platforms for Health Care, a project of the Leadership Consortium for a Value and Science-Driven Health System. These funds will support a series of strategic activities to explore and foster agreement on policies and standards among health systems to facilitate a more integrated health system based on interoperability of health data and digital platforms to accelerate the effectiveness and efficiency of care.
- Grants totaling \$1,056,621 were received from the **Robert Wood Johnson Foundation** to continue the more than four-decades-long partnership on the NAM's RWJF Health Policy Fellows Program.
- The W.K. Kellogg Foundation, Buffet Early Childhood Institute, and Early Milestones Colorado contributed a total of \$284,000 to support a project of the Innovation to Incubation program on transforming the workforce for children from birth to age eight.

These gifts and grants are just a few of the many ways in which members, friends, and organizations supported the NAM during 2016. We are grateful for the loyal support and new partnerships that enabled our work this year.

We gratefully acknowledge the support of private contributors to the National Academy of Medicine. The collective, private philanthropy of our members and friends helps to enhance the NAM's mission to lead, inspire innovation, and impact the health of all people.

Lifetime Giving

Einstein Society

In recognition of members and friends who have made lifetime contributions of \$100,000 or more to the National Academy of Sciences, the National Academy of Engineering, or the National Academy of Medicine. We acknowledge contributions made as personal gifts or as gifts facilitated by the donor through a donor-advised fund, matching gift program, or family foundation. Names in bold are NAM members.

\$10 million or more

Arnold and Mabel Beckman*
Bernard M. Gordon
Fred Kavli*
Daniel E. Koshland, Jr.*
George P. Mitchell*
Raymond and Beverly Sackler
James H. and Marilyn Simons

\$5 million to \$10 million

Donald L. Bren William R. and Rosemary B. Hewlett* Peter O'Donnell, Jr. Dame Jillian Sackler

\$1 million to \$5 million

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26

Cecil H. Green*
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Nelson*

Simon*

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\$250,000 to \$500,000

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\$75,000 to \$100,000

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Maw-Kuen Wu Wm. A. Wulf Tilahun D. Yilma

Michael Zubkoff

Anonymous (1)

Loyalty Society

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H. Norman Abramson
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Bruce and Betty Alberts
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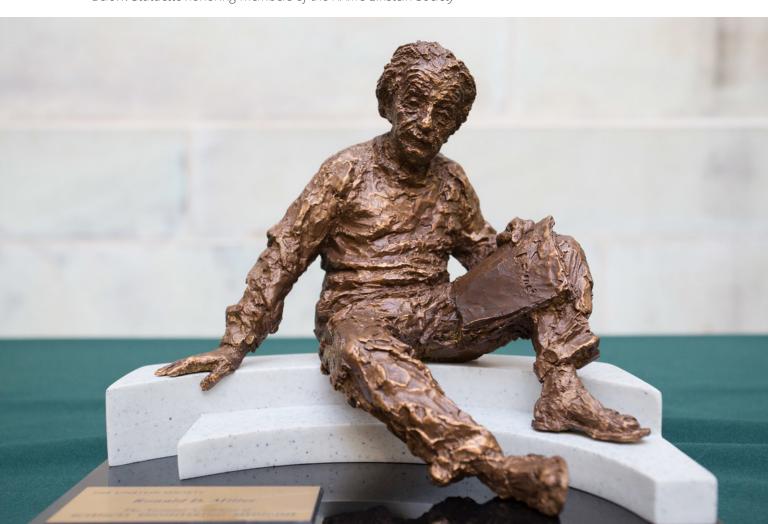
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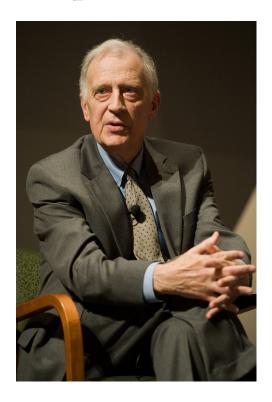
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Below: Statuette honoring members of the NAM's Einstein Society



Remembering Ralph Cicerone



Ralph J. Cicerone, president of the National Academy of Sciences from 2005 until 2016, passed away on November 5, 2016. He is deeply missed.

Dr. Cicerone's research in atmospheric chemistry, climate change and energy involved him in shaping science and environmental policy at the highest levels nationally and internationally. He received a number of honorary degrees and many awards for his scientific work. Among the latter, the Franklin Institute recognized his fundamental contributions to the understanding of greenhouse gases and ozone depletion by selecting Dr. Cicerone as the 1999 laureate for the Bower Award and Prize for Achievement in Science. One of the most prestigious American awards in science, the Bower Award also recognized his public policy leadership in protecting the global environment. In 2001, he led a National Academy of Sciences study of the current state of climate change and its impact on the environment and human health, requested by President Bush. The American Geophysical Union awarded Dr. Cicerone its James B. Macelwane Award in 1979 for outstanding contributions to geophysics by a young scientist and its 2002 Roger Revelle Medal for outstanding research contributions to the understanding of Earth's atmospheric processes, biogeochemical cycles, and other key elements of the climate system. In 2004, the World Cultural Council honored him with the Albert Einstein World Award in Science. In addition to the National Academy of Sciences, Dr. Cicerone was a member of the American Academy of Arts and Sciences, the American Philosophical Society, the Accademia Nazionale dei Lincei, the Russian Academy of Sciences, and the Korean Academy of Science and Technology. He served as president of the American Geophysical Union, the world's largest society of earth scientists.

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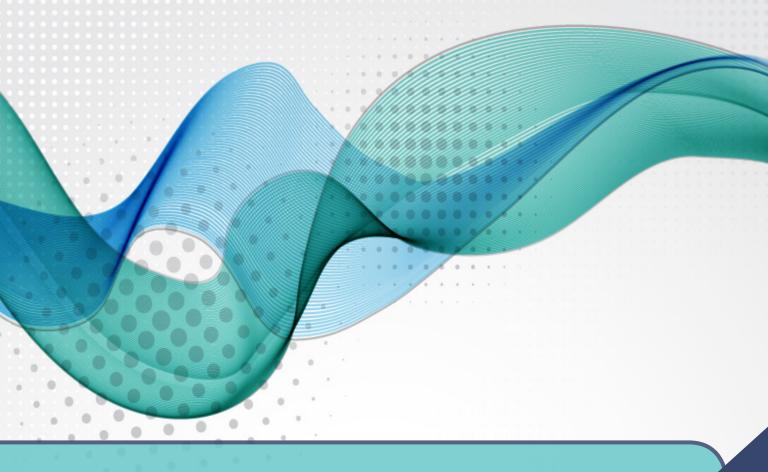
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Knowing is not enough; we must apply. Willing is not enough; we must do.

— Johann Wolfgang von Goethe

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