ABOUT THE NATIONAL ACADEMY OF MEDICINE

Founded in 1970 as the Institute of Medicine, 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). Operating under the 1863 congressional charter of the National Academy of Sciences, the National Academies provide independent, objective analysis and advice to the nation and conduct other activities to solve complex problems and inform public policy decisions. The National Academies also encourage education and research, recognize outstanding contributions to knowledge, and increase public understanding in matters of science, engineering, and medicine.

Learn more: NAM.edu
In 2018, we kicked off the implementation phase of the 5-year NAM strategic plan (NAM.edu/2018StrategicPlan). The plan lays out three overarching goals for the Academy: 1) actively identify and address critical issues with balanced and authoritative scientific evidence; and lead and inspire action on bold ideas to impact science, medicine, policy, and health equity domestically and globally; 2) diversify and activate the membership of the Academy and engage emerging leaders and scholars to enhance our leadership capacity and address new contexts and challenges; and 3) build leadership capacity across diverse disciplines to shape the future of health and medicine.

As I reflect on the past 18 months, I am tremendously proud to share our progress toward these goals. Our first goal aims to position the NAM as not only a trusted advisor but also a proactive and visionary leader in the face of complex challenges. The devastating rates of opioid misuse and overdose in the United States presents one such challenge. To that end, in late 2018 we launched the Action Collaborative on Countering the U.S. Opioid Epidemic, a first-of-its-kind public-private partnership comprising over 50 organizations, including 8 federal agencies. The Action Collaborative aims to catalyze collective action for short-term impact in four key areas: 1) provider education and training; 2) prescribing guidelines and evidence standards; 3) prevention, treatment, and recovery; and 4) research, data, and metrics.

Yet another urgent challenge with global and generational ramifications is the rapid development of human genome editing technology. Building on recommendations from our 2017 consensus report Human Genome Editing: Science, Ethics, and Governance, we co-hosted the Second International Summit on Human Genome Editing in Hong Kong alongside the National Academy of Sciences (NAS), the United Kingdom’s Royal Society, and the Academy of Sciences of Hong Kong in November 2018. During the summit, news broke that Chinese scientist He Jiankui had carried out an uncondoned application of CRISPR human germline editing. This surprising news demonstrates the supreme urgency to develop international consensus around acceptable use of human genome editing technologies, as well as supporting regulatory and scientific frameworks. The NAM and the NAS, with support from the It has been less than four years since the Institute of Medicine was reconstituted as the National Academy of Medicine. What we’ve accomplished in that short time is remarkable—and would not be possible without the unwavering support of our members, volunteers, sponsors, and staff.
Royal Society, have led the charge to convene an international commission to develop and disseminate such a consensus. The commission’s report is expected in 2020.

We also hope to not only spark innovation but also advance international policy around the issue of healthy longevity—or extending the human “healthspan”—through the Healthy Longevity Global Grand Challenge. In 2018, we brought on 9 global collaborators for an international prize competition to catalyze breakthroughs as well as 11 sponsors for an evidence-based Global Roadmap report authored by an international commission. The Grand Challenge is poised for launch in late 2019.

Our work on opioids, gene editing, and healthy longevity are just three among many examples of the NAM’s commitment to advise and lead both domestically and globally. Our second strategic goal, pertaining to the engagement and activation of NAM members and cultivating the pipeline of future health and medical leaders, is no less critical. Members are the lifeblood of our Academy; without their expert guidance and leadership, our advisory initiatives would not be possible. In 2018, we elected our most diverse class of members in history—42 percent women, 28 percent minorities, and 24 percent age 50 or under. Although these numbers represent a significant improvement over past years, there is still much work to be done, including in the area of geographic diversity. Therefore, we have established a permanent diversity committee to advise the NAM’s Governing Council, monitor progress, and ensure accountability. For the first time, we have also debuted a code of conduct to hold NAM members to the highest standards of behavior, among other improvements to membership policy.

We are also committed to enriching the next generation of leaders and innovators in health, medicine, and biomedical science. To that end, in 2018, we named 22 new scholars to our Emerging Leaders in Health and Medicine Program. These early- to mid-career professionals will volunteer their service in activities of the National Academies, be paired with NAM member mentors, and organize an annual symposium and networking opportunity for peers and senior field leaders.

Finally, our third strategic goal looks to position the NAM, and the field, for a near future in which science and technology are advancing at an exponential pace and the convergence of disciplines becomes an ever more necessary prerequisite for effective action. Therefore, we established a Committee on Emerging Science, Technology, and Innovation in Health and Medicine to highlight significant developments, examine their potential social, ethical, regulatory, and workforce ramifications, and identify opportunities for action. The work of this committee dovetails with that of the National Academies’ Convergence Advisory Committee, which in fall 2018 hosted a major workshop on fostering a culture that supports convergence approaches to research.

There is much more to come in 2019 and 2020—including, of particular note, the 50th anniversary of the founding of the Institute of Medicine and the 5th anniversary of the establishment of the NAM and the new Health and Medicine Division of the National Academies. The 50th anniversary affords an opportunity to not only reflect on our greatest areas of impact since 1970 but also consider the most pressing challenges of the future and orient ourselves for action. We will launch our anniversary year at the NAM Annual Meeting in October 2019, followed over the next 12 months by a future-looking symposia series, a commemorative gala, and multiple opportunities to celebrate the unique role and impact of the NAM and the National Academies.

It bears repeating: none of this would be possible without the committed partnership of NAM members, volunteers, donors, and staff. It is an honor to serve as president of this wonderful organization, and I look forward to a productive year ahead.

Victor J. Dzau, MD
President
National Academy of Medicine
2018-2019 GOVERNING COUNCIL

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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
Program Highlights

Three core priorities guide the NAM’s work: 1) responding to critical and pressing issues; 2) advising the nation and the world on health and health care; and 3) leading and inspiring for the future. In the sections that follow, learn about our recent progress toward each of these goals.
In November 2018, the NAM co-hosted the Second International Summit on Human Genome Editing in Hong Kong alongside the National Academy of Sciences (NAS), the United Kingdom’s Royal Society, and the Academy of Sciences of Hong Kong (following the inaugural summit in 2015). The summit was attended by more than 500 researchers, policy makers, ethicists, patient representatives, and others from around the world. Attendees discussed the benefits and risks of human genome editing, ethical and cultural perspectives, regulatory and policy considerations, and public engagement and outreach efforts. A published summary of the summit is now available at nationalacademies.org/gene-editing.

During the summit, Chinese scientist He Jiankui made the unexpected announcement that he had carried out an uncondoned use of CRISPR to edit the genes of twin baby girls, highlighting the urgency of adopting common international principles for governance and use of this powerful technology.

Therefore, the NAM, NAS, and Royal Society have begun the process of appointing an international commission to develop a framework for considering technical, scientific, medical, regulatory, and ethical requirements for germline genome editing, should society conclude such applications are acceptable (see abridged statement opposite). The commission’s report is expected in 2020.
Statement on Call for Moratorium on and International Governance Framework for Clinical Uses of Heritable Genome Editing*

Statements from the organizing committees of both the 2015 and 2018 international summits made it clear that any clinical use of heritable genome editing would be irresponsible at this time. A 2017 U.S. National Academies report also concluded that clinical use, including clinical trials, of heritable germline editing should not proceed until peer-reviewed preclinical research clarifies the potential risks and benefits, and should be considered only for compelling medical reasons, in the absence of reasonable alternatives, and with maximum transparency and strict oversight. In addition, a 2018 report from the Nuffield Council on Bioethics recommended that much more research is needed in order to establish standards for clinical use, along with many more opportunities for broad societal engagement on these issues. [....]

There is an urgent need for an internationally accepted framework that addresses these complex scientific, ethical, and societal issues. Toward that end, the U.S. National Academies and the Royal Society are leading an international commission to detail the scientific and the ethical issues that must be considered in planning any genome editing, and to define specific criteria and standards for evaluating whether proposed clinical trials or applications that involve germline editing should be permitted. We are pleased that dozens of other scientific academies around the world are joining us and lending their support to the commission. We also welcome the establishment by the World Health Organization of its expert panel on human genome editing with which we have agreed to liaise closely.

We intend for the commission’s work to be an important step forward in reaching international consensus on standards that should apply to decisions about germline editing. As emphasized previously by our Academies and others, we also recognize the need to reach beyond the scientific and medical communities to achieve broad societal consensus before making any decisions, especially given the global implications of heritable genome editing.

Victor J. Dzau, President, U.S. National Academy of Medicine
Marcia McNutt, President, U.S. National Academy of Sciences
Venkatraman Ramakrishnan, President, Royal Society of the U.K.

Every day, an estimated 130 Americans die from an opioid overdose—a grim statistic that has devastated families and communities around the nation. Due to the complex and urgent nature of the epidemic, reversing it will require a multi-sectoral and multi-pronged response; no single organization, government agency, or sector can solve this crisis on its own. Within the past year alone, numerous initiatives, reports, guidelines, and recommendations have been developed to address the epidemic across public and private sectors. With so much activity underway, strong mechanisms to support better coordination, information sharing, and evidence-based practice are needed.

In 2018, the NAM launched the Action Collaborative on Countering the U.S. Opioid Epidemic to improve coordination and accelerate the pace of change. The Action Collaborative, comprised of more than 50 organizations representing government, communities, health systems, provider groups, payers, industry, nonprofits, academia, and more, is committed to sharing knowledge, aligning ongoing initiatives, and advancing collective, multi-sector solutions.

In particular, the Action Collaborative will work toward the following strategic goals:

1. Identify and raise the visibility of complex challenges, outstanding research gaps and needs of the opioid crisis that require a collective, multi-sectoral response
2. Elevate and accelerate evidence-based, multi-sectoral, and interprofessional solutions to improve outcomes for those affected by the opioid crisis
3. Catalyze action on shared priorities and solutions to help overcome the crisis and improve outcomes for all.

The Action Collaborative is comprised of four cross-cutting working groups:
1. Health Professional Education and Training
2. Prescribing Guidelines and Evidence Standards
3. Prevention, Treatment, and Recovery Services
4. Research, Data, and Metrics Needs
The Action Collaborative held an introductory webinar in February 2019 that featured an overview of the Action Collaborative’s work presented by co-chair Admiral Brett Giroir, Assistant Secretary for Health, U.S. Department of Health and Human Services. The webinar also provided an overview of the four working groups and offered a forum for questions and comments from the public. Over 1,000 people registered to participate in the webinar; a recording is available on the NAM’s website.

Also in 2018, the National Academies of Sciences, Engineering, and Medicine launched several new consensus studies related to opioids and pain management. These include:

- Medications for Opioid Use Disorder Save Lives
- Evidence-based Clinical Practice Guidelines for Prescribing Opioids for Acute Pain
- Examination of the Integration of Opioid and Infectious Disease Prevention Efforts in Select Programs
- Review of Specific Programs in the Comprehensive Addition and Recovery Act
- Development of a Protocol to Evaluate the Concomitant Prescribing of Opioid and Benzodiazepine Medication and Veterans Deaths and Suicides

Medications for Opioid Use Disorder Save Lives was published in March 2019 and reached 7 conclusions about medication-based treatment and its use in combating opioid use disorder (OUD), including that OUD is a treatable chronic brain disease and that most people who could benefit from medication-based treatment for OUD do not receive it. The report has been widely discussed in the media, including in columns by the editorial boards of the New York Times and USA Today. Committee chair Alan Leshner authored a related commentary that was published by Science; Leshner and NAM president Victor Dzau also published an op-ed in JAMA calling on the medical profession to do its part to increase access to medication-based treatment.

Visit nam.edu/OpioidCollaborative for more information.

Select Related Publications from the NAM & the National Academies

- Medications for Opioid Use Disorder Save Lives
- Pain Management and the Opioid Epidemic
- First, Do No Harm: Marshaling Clinician Leadership to Counter the Opioid Epidemic
Promoting Clinician Well-Being & Resilience
The Next Chapter for Quality Care

Clinician well-being is essential for safe, high-quality patient care. However, clinicians of all kinds, across all specialties and care settings, are experiencing burnout at alarming rates.

Burnout is nearly twice as prevalent among physicians as compared to U.S. workers in other fields, and nurses report similarly high levels of burnout and emotional exhaustion. While personal factors play a role in the development of burnout, many clinicians suffer from burnout due to organizational and practice demands that exponentially increase their risk. Burnout is a systems issue that requires buy-in and coordinated action from multiple stakeholders, including health system leaders, policy makers, insurers, health IT vendors, researchers, educators, clinicians, trainees, and patients.

The NAM launched the Action Collaborative on Clinician Well-Being and Resilience in January 2017. The Action Collaborative has three primary goals:

1. Raise the visibility of clinician anxiety, burnout, depression, stress, and suicide
2. Improve baseline understanding of challenges to clinician well-being
3. Advance evidence-based, multidisciplinary solutions to improve patient care by caring for the caregiver.

Since its launch, notable accomplishments of the Action Collaborative include:

• Raising awareness about the challenges to clinician well-being via multiple publications and stakeholder events, including a congressional briefing;
• Marshaling a network of more than 190 organizations publicly committed to reversing trends in clinician burnout and improving clinician well-being;
• Developing a comprehensive conceptual model to characterize the factors that influence clinician well-being (opposite);
• Creating and generating engagement around an award-winning online Clinician Well-Being Knowledge Hub that shares resources and solutions (NAM.edu/ClinicianWellBeing)
• Facilitating a process to provide streamlined suggestions to the Centers for Medicare and Medicaid Services (CMS) regarding revisions to evaluation and management (E/M) guidelines to reduce administrative burden
• Setting the foundation for long-term culture change via an art show to collect insights directly from clinicians, patients, and loved ones of clinicians
• In 2018, the NAM was also proud to launch a consensus study on systems approaches to improve patient care by supporting clinician well-being. The report will be published in late 2019.

Over the next two years, the Action Collaborative will focus on engaging leadership; reducing barriers to address mental health needs; establishing organizational standards, best practices, and metrics that improve clinician well-being; documentation and the digital health environment; planning for the sustainability of clinician well-being efforts once current funding ends; and furthering the recommendations from the consensus report.

To access resources from the Action Collaborative and to learn more, please visit NAM.edu/CW.
In 2018, the NAM called on artists of all skills and abilities to express what clinician burnout and well-being looks, sounds, and feels like. The resulting art gallery, *Expressions of Clinician Well-Being*, collects insights directly from clinicians, patients, loved ones, and organizations working to prevent burnout and promote well-being. By allowing people to creatively express their experiences with burnout, this gallery captures critical moments in the journey to well-being. Ten pieces from the gallery are now part of a traveling exhibition that has been touring the country. To view the full gallery and learn how to host the exhibition, please visit [NAM.edu/ExpressClinicianWellBeing](http://NAM.edu/ExpressClinicianWellBeing).

*Clockwise from top left:*
"Isolation Mask" by Julie Shinn of Parkland, FL; "Checklist Manifest" by Somalee Banerjee of San Francisco, CA; "The Scribe" by Daryl Wofford of New York, NY; "Reflection" by Sung Min Ma of Boston, MA. Copyright remains with the artists.
The NAM’s Culture of Health Program (CoHP) is a multi-year collaborative effort to identify strategies to create and sustain conditions that support equitable good health for everyone in America. With the oversight of an expert advisory committee, the CoHP is working toward four primary goals:

- **Lead:** Build a knowledge base to inform actions and partnerships that will advance health equity
- **Translate:** Bridge science to action for impact on health equity and optimal health for all
- **Engage:** Strengthen capacity in communities and inform legal, policy, and system reform
- **Sustain:** Transform culture to accelerate progress in areas that still have significant health disparities

In 2017, the CoHP published its first consensus report, *Communities in Action: Pathways to Health Equity*. The report highlighted that health equity is crucial and health inequity is costly in terms of both financial and human capital resources. It identified structural inequities and unequal allocation of power and resources as the root causes of health inequity. The report also emphasized the power of communities to address the social determinants of health (SDoH) and examined nine exemplar communities across the United States to highlight promising community-based solutions in the context of 1) key levers, such as policies; 2) key relationships, such as cross-sectoral partnerships; and 3) other elements needed to be successful.

A suite of dissemination materials, including a conceptual model and targeted briefs, are available at [nationalacademies.org/healthequityhub](http://nationalacademies.org/healthequityhub).

The CoHP has three additional consensus studies currently underway that will release in spring and summer 2019. Two studies apply the science of neurobiological and socio-behavioral development to health equity in the prenatal through early childhood years and during adolescence. The third study focuses on the integration of health and
social care into the U.S. health care system.

In 2018, the NAM launched a first-of-its-kind short documentary series, *Communities Driving Health Equity*, which shares lessons from three community organizations working to advance health equity at the local level. Collectively, the films have been viewed more than 200,000 times. Educators across the nation have used the films in their classrooms, and several conferences have featured the films in their programs.

In 2018, the NAM also began working with five communities to develop actionable plans to address SDoH to advance health equity. These communities include the Magnolia Community Initiative from East Los Angeles, CA; a regional team from the Columbia Gorge in Washington and Oregon; WE ACT for Environmental Justice from Harlem, NY; The United Way of Bexar County in San Antonio, TX; and The Williamson Health and Wellness Center from Williamson, WV. Through a facilitated process administered by the NAM, the community teams will develop strategy plans or roadmaps to identify pathways to support equitable good health for their residents, address SDoH, and improve health equity. Communities will convene over the course of 18 months in person and via teleconference to receive guidance from technical advisors in the field and learn from other cohort communities. Resulting plans will be wholly owned by the community teams and grounded in the science of National Academies reports.

*Visualize Health Equity*, a nationwide art show that first launched in 2017, continues to inspire communities around the country to partake in similar art-inspired events, and the show has become a traveling exhibition that can be hosted at conferences, events, and organizations across the nation. To view the artwork or host the traveling show, visit [NAM.edu/VisualizeHealthEquity](http://NAM.edu/VisualizeHealthEquity).

Building on the success of *Visualize Health Equity*, the NAM launched a second call for artists in late 2018 focused on uplifting the voices of young people and their lived experiences. *Young Leaders Visualize Health Equity* called on people between the ages of 5 and 26 to imagine a world where everyone has the same chance to live a healthy life. A digital gallery is planned for 2019. To learn more, visit [NAM.edu/YoungLeaders](http://NAM.edu/YoungLeaders).

### Communities Driving Health Equity

As part of its efforts to promote healthy equity at the community level, the NAM produced a series of three short documentaries featuring the efforts of communities in Buffalo, NY; Honolulu, HI; and Indianapolis, IN, to address the social determinants of health. We are proud to present the stories of three diverse communities that face complex, pervasive challenges but are all making progress in advancing health equity. These documentaries are free to view and use for educational purposes (access at [NAM.edu/DrivingHealthEquity](http://NAM.edu/DrivingHealthEquity)).
Fewer than 1 in 3 hospitals are able to share patient information with other health providers.

In our increasingly complex health care system, where patients routinely see multiple doctors across disciplines and physical locations, health care technologies need to be able to transmit these critical data across time, space, and providers. This level of connectivity is called interoperability—and unfortunately, health care is currently far from this ideal state.

With support from the Gordon and Betty Moore Foundation, the NAM held a workshop in January 2018 to examine the current state of interoperability in health and health care, the policy and marketplace drivers that have both impeded progress and those that could be used to advance interoperability, and experiences from other sectors that could serve as blueprints for the health care community.

Insights from the workshop were synthesized into an NAM Special Publication that identifies leveraging organizational demand and purchasing requirements as a particularly effective approach to drive health care toward interoperability. The Special Publication highlights three environments that are critical in achieving interoperability, the nature of requirements for functional interoperability, and the mapping of those requirements into prevailing contracting practices.

In this Special Publication, the NAM raises the visibility of this issue that affects all aspects of health care every day, and provides five action priorities that leaders can utilize to move the field toward a more connected, safer, and efficient state. In April 2019, the NAM hosted a webinar to facilitate progress in procuring interoperability, featuring a keynote address by Kate Goodrich, Chief Medical Officer for the Centers for Medicare & Medicaid Services. For more information and to download the publication, visit NAM.edu/interoperability.
### 5 Action Priorities Toward Procuring Interoperability

| COMMIT | Declare interoperability a primary priority and form an organization-wide interoperability steering group or related capacity to champion the IT acquisition strategy. |
| IDENTIFY | Charge this group with identifying the set of interoperability goals, requirements, and model use cases for the procurement process to support organizational priorities and patient outcome goals. |
| COLLABORATE | Create a sector-wide strategy and partner with other stakeholders to align on common contracting requirements and specifications to move toward the next generation of interoperable health IT. |
| SPECIFY | Use the collaboratively developed specifications to state clear functional interoperability requirements in existing and future proposals, purchases, and contracts. |
| ASSESS | Establish and monitor short-term and long-term metrics for the progress and contributions of interoperability to system-wide learning and improvement of patient outcomes. |

Download the report and related resources for free at NAM.edu/interoperability

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**Procuring Interoperability**

*Achieving High-Quality, Connected, and Person-Centered Care*

Download the report and related resources for free at NAM.edu/interoperability

**Learning Health System Series**

NAM Leadership Consortium for a Value & Science-Driven Health System
The Future of Health Services Research
Maintaining a Critical Focus

Health services research is the study of the field of health care itself—the examination of the external and internal factors that affect access, quality, safety, and efficiency of the delivery of health care.

Since the 1960s, health services research (HSR) has provided the foundation for progress, effectiveness, and value in health care. Ironically, at a time when appreciation has never been higher for both the need for and potential of HSR, political and financial support for the field appear to be weakening.

The NAM held a workshop on the future of HSR in February 2018 with support from AcademyHealth, American Association of Colleges of Nursing, American Board of Family Medicine, American Society of Anesthesiologists, Association of American Medical Colleges, Federation of American Hospitals, and the Robert Wood Johnson Foundation. The workshop reviewed key priorities for HSR, current sources of support, how opportunities for HSR contributions are identified, and how all of these processes might be improved.

The outcomes of the workshop were captured in an NAM Special Publication titled The Future of Health Services Research: Advancing Health Systems Research and Practice in the United States. The Special Publication called for a set of activities required to transform the field, making it both relevant and responsive to the health care system of the 21st century. HSR must develop data infrastructure, create a network of stakeholders, and characterize results that would lead to system-wide improvement, because the physical and financial health of the nation is at stake.

Download the report and related resources for free at NAM.edu/HSR.
The physical and financial health of the nation is at stake.

Health services research provides the evidence needed to increase access to care, decrease health care costs, and improve health outcomes.

Yet only 0.3% of US health care spending is directed to funding health services research.

To transform itself to meet the needs of a 21st-century health care system, health services research must develop data infrastructure, create a network of stakeholders, and characterize results that would lead to system-wide improvement.

The Future of Health Services Research
Advancing Health Systems Research and Practice in the United States

Download the report and related resources for free at NAM.edu/HSR

Learning Health System Series
NAM Leadership Consortium for a Value & Science-Driven Health System
Just on the horizon, we can envision an explosion of potential new medicines, treatments, technologies, and preventive and social strategies that could help transform the way we age and ensure better health, function, and productivity during a period of extended longevity. Solutions from many fields are urgently needed to maximize the number of years lived in good health and a state of well-being. Now is the time to support the next breakthroughs in healthy longevity, so that all of us can benefit from the tremendous opportunities it has to offer.

The Healthy Longevity Global Grand Challenge, founded by the NAM, aims to build a worldwide movement to increase physical, mental, and social well-being for people as they age. The initiative will have two components: a prize competition to catalyze breakthrough innovations from any field, and an evidence-based report authored by an international commission. The combined objectives of the initiative are to:

• Catalyze breakthrough ideas and research that will extend the human health span
• Achieve transformative and scalable innovation by translating evidence into action and prioritizing equity and access
• Provide a comprehensive assessment of the challenges and opportunities presented by global aging
• Build a broad ecosystem of stakeholder support

The Challenge will launch in late 2019. Sign up to get updates at NAM.edu/HealthyLongevity.
Emerging Leaders in Health and Medicine

The Emerging Leaders in Health and Medicine program exists to increase the NAM’s engagement with exceptional early- and mid-career professionals working in biomedical science, population health, health care, health policy, and related fields.

The Emerging Leaders program facilitates opportunities for mentorship, collaboration, and innovation among emerging leaders, NAM members, and experts across sectors. Program scholars also provide valuable input and feedback to help shape the priorities of the NAM and sustain the NAM’s impact and reputation as a national leader in advancing knowledge and accelerating progress in science, medicine, policy, and health equity.

In 2018, the NAM added 10 new scholars to the program. “These exceptional individuals were selected to the National Academy of Medicine’s Emerging Leaders in Health and Medicine program for their leadership attributes and because they are poised to shape the future of health and medicine,” said NAM President Victor J. Dzau. “I look forward to engaging these impressive individuals, who are the next generation of scientists, health care providers, public health professionals, and policymakers, to develop a network of young leaders and catalyze innovative and cross-disciplinary activities addressing some of the most pressing challenges in health and medicine.”

The first annual Emerging Leaders Forum, a symposium organized by program scholars, is scheduled for summer 2019.
2018-2019 Scholars

Paul P. Christopher, MD
Brown University

Deidra C. Crews, MD, ScM
Johns Hopkins University School of Medicine

Adeze Enekwechi, PhD, MPP
Impaq, LLC

Lori Freedman, PhD
University of California, San Francisco

Christopher Friese, PhD, RN, AOCN, FAAN
University of Michigan

Jordan Green, PhD
Johns Hopkins University

Marcia Haigis, PhD
Harvard Medical School

Sandeep Kishore, MD, PhD, MSc
Mount Sinai Health

Mark Neuman, MD
University of Pennsylvania

Minal Patel, PhD, MPH
University of Michigan

Suchi Saria, MSc, PhD
Johns Hopkins University

Margaret (Gretchen) L. Schwarze, MD, MPP
University of Wisconsin

Julie Segre, PhD
National Human Genome Research Institute,
National Institutes of Health

Jacob Sherkow, JD, MA
New York Law School

Hanni Stoklosa, MD, MPH
Harvard Medical School

Sohail Tavazoie, MD, PhD
The Rockefeller University

Y. Claire Wang, MD, ScD, MS
New York Academy of Medicine

Jonathan Watanabe, PharmD, MS, PhD,
BCGP
University of California, San Diego

Joseph C. Wu, MD, PhD
Stanford School of Medicine

Ramnik Xavier, MD, ChB
Massachusetts General Hospital, Harvard Medical School, & Broad Institute

Pictured opposite, left to right: Gregg Margolis (program co-director), Freedman, Meg McCoy (program co-director), Wang, Sara Hitzig (membership program officer), Watanabe, Victor Dzau (NAM president), Segre, Haigis, Kishore, Enekwechi, Green, Saria
In brief, the Committee on the Future of Nursing 2020-2030 will examine:

- The role of nurses in improving the health of individuals, families, and communities by addressing social determinants of health
- The current and future deployment of all levels of nurses across the care continuum, including in collaborative practice models
- System facilitators and barriers to achieving a workforce that is diverse, including gender, race, and ethnicity, across all levels of nursing education
- The role of the nursing profession in ensuring that the voice of individuals, families and communities are incorporated into design and operations of clinical and community health systems
- Training and competency development needed to prepare nurses, including advance practice nurses, to work outside of acute care settings
- The ability of nurses to serve as change agents in creating systems that bridge the delivery of health care and social needs care in the community
- Research needed to identify or develop effective nursing practices for eliminating gaps and disparities in health care
- The importance of nurse well-being and resilience

In developing its recommendations for the future decade of nursing in the United States, the committee will draw from domestic and global examples of evidence-based models of care that address social determinants of health and help build and sustain a culture of health.

The committee will host information-gathering town halls throughout summer 2019. Visit NAM.edu/FutureofNursing2030 for more information.
The NAM Committee on Emerging Science, Technology, and Innovation in Health and Medicine (CESTI), established in 2018, will consider not only the positive but also the potentially negative implications of these developments. The committee is charged with: 1) identifying emerging developments in biological and medical research and technology; 2) identifying attendant social, ethical, regulatory, and workforce ramifications; 3) identifying opportunities for the independent examination of such questions; and 4) developing a national/international framework to proactively and collectively address the impact of developments, both positive and negative.

CESTI's work will build on and align with that of the National Academies Convergence Advisory Committee. Recognizing that the challenges of the future cannot be addressed in disciplinary silos, the NAM and the National Academies are committee to advancing as broad a definition of convergence as possible, including not only physical, mathematical, computational, and life sciences and engineering, but also fields such as artificial intelligence, social sciences, economics, and beyond. Indeed, in August 2018, NAM president Victor Dzau and special assistant Celynne Balatbat published an article in the *Lancet* arguing that even the field of population health should be reimagined as convergence science.

In fall 2018 the convergence committee organized a workshop to discuss strategies for fostering convergence-based approaches to research. A summary of the workshop is forthcoming in 2019.
Member Highlights

The NAM has more than 2,200 members elected in recognition of professional achievement and commitment to volunteer service in activities of the National Academies of Sciences, Engineering, and Medicine. In 2018, the NAM elected 75 regular members and 10 international members. For those at the top of their field, NAM membership reflects the height of professional achievement and commitment to service.
Members Inducted in 2018 (Class of 2017)

Mark E. Anderson, MD, PhD
Johns Hopkins University School of Medicine

Scott Allen Armstrong, MD, PhD
Dana-Farber Cancer Institute, Boston Children’s Hospital, and Harvard Medical School

Amy F.T. Arnsten, PhD
Yale University School of Medicine

Cornelia Isabella Bargmann, PhD
The Rockefeller University and Chan Zuckerberg Initiative

Mary T. Bassett, MD, MPH
New York City Department of Health and Mental Hygiene

Samuel Frank Berkovic, MD
University of Melbourne (Austin Health), Australia

Christopher N. Bowman, PhD
School of Dental Medicine, University of Colorado

Elizabeth H. Bradley, PhD
Vassar College

Robert F. Breiman, PhD
Emory University

Melinda Beeuwkes Buntin, PhD
Vanderbilt University School of Medicine

Carrie Lynn Byington, MD
Texas A&M University

Neil Calman, MD, MMS
Icahn School of Medicine at Mount Sinai

Xuetao Cao, MD, PhD
Chinese Academy of Medical Sciences and Peking Union Medical College, China

Anne Case, PhD
Princeton University

Arup K. Chakraborty, PhD
Massachusetts Institute of Technology

Howard Y. Chang, MD, PhD
Stanford University School of Medicine

Wendy Webber Chapman, PhD
University of Utah

Tina L. Cheng, MD, MPH
Johns Hopkins University and The Johns Hopkins Hospital

Marshall H. Chin, MD, MPH
University of Chicago

Lewis A. Chodosh, MD, PhD
Abramson Cancer Center and University of Pennsylvania

Christos Coutifaris, MD, PhD
University of Pennsylvania

Benjamin F. Cravatt, PhD
The Scripps Research Institute

Mark Joseph Daly, PhD
Massachusetts General Hospital

Alan D. D’Andrea, MD
Dana-Farber Cancer Institute and Harvard Medical School
Richard J. Davidson, PhD
University of Wisconsin, Madison

Joshua C. Denny, MD, MS, FACMI
Vanderbilt University Medical Center

Karen B. DeSalvo, MD, MPH, MSc
U.S. Department of Health and Human Services

Sharon M. Donovan, PhD, RD
University of Illinois, Urbana-Champaign

Mark R. Dybul, MD
Georgetown University Medical Center

Evan E. Eichler, PhD
University of Washington School of Medicine and Howard Hughes Medical Institute

Serpil Erzurum, MD
Cleveland Clinic

Jeremy James Farrar, MBBS, DPhil
Wellcome Trust, United Kingdom

Alain Fischer MD, PhD
Collège de France and Hôpital Necker-Enfants Malades, France

Mona N. Fouad, MD, MPH
University of Alabama at Birmingham

Gerard E. Francisco, MD
University of Texas System, NeuroRecovery Research Center, and TIRR Memorial Hermann Hospital

Rebekah Gee, MD, MPH, FACOG
State of Louisiana

Christine Grady, RN, PhD
National Institutes of Health

Rachel Green, PhD
Johns Hopkins University School of Medicine

Michael Eldon Greenberg, PhD
Harvard Medical School

Felicia Hill-Briggs, PhD, ABPP
Johns Hopkins University School of Medicine and Johns Hopkins HealthCare

Chanita A. Hughes Halbert, PhD
Medical University of South Carolina

Scott J. Hultgren, PhD
Washington University School of Medicine

Yasmin L. Hurd, PhD
Icahn School of Medicine at Mount Sinai

Nicholas Patrick Jewell, PhD
University of California, Berkeley

V. Craig Jordan, OBE, PhD, DSc, FMedSci, FAACR
University of Texas M.D. Anderson Cancer Center

Eve A. Kerr, MD, MPH
University of Michigan and VA Ann Arbor Healthcare System

George F. Koob, PhD
National Institute on Alcohol Abuse and Alcoholism

Gabriel P. Krestin, MD, PhD
Erasmus MC, University Medical Center, Netherlands

Paul P. Lee, MD, JD
University of Michigan Medical School

Allan I. Levey, MD, PhD
Emory University

Charles M. Lieber, PhD
Harvard University

Daniel H. Lowenstein, MD
University of California, San Francisco

Lynne Elizabeth Maquat, PhD
University of Rochester

Gerald E. Markowitz, PhD
City University of New York

John R. Mascola, MD
National Institute of Allergy and Infectious Diseases

Bongani M. Mayosi, BMedSci, MB, ChB, DPhil
University of Cape Town, South Africa

Tirin Moore, PhD
Stanford School of Medicine

Robin Purdy Newhouse, PhD, RN, FAAN
Indiana University School of Nursing

M. Kariuki Njenga, PhD
Washington State University

Olugbenga Ogedegbe, MD, MS, MPH
New York University

Rebecca Onie, JD
Health Leads

Maria A. Oquendo, MD, PhD
University of Pennsylvania

Michael S. Parmacek, MD
University of Pennsylvania

Ramon E. Parsons, MD, PhD
Icahn School of Medicine at Mount Sinai

Scott Loren Pomeroy, MD, PhD
Harvard Medical School and Boston Children's Hospital

Martin Pomper, MD, PhD
Johns Hopkins University School of Medicine

Rita F. Redberg, MD, MSc
University of California, San Francisco

Lesley Regan, MD, DSc, FRCOG
Royal College of Obstetricians and Gynaecologists and St Mary's Hospital, Imperial College London, United Kingdom

Therese S. Richmond, PhD, CRNP, FAAN
University of Pennsylvania

Dorothy E. Roberts, JD
University of Pennsylvania

John H. Sampson, MD, PhD, MHS, MBA
Duke University Medical Center

Robert F. Siliciano, MD, PhD
Johns Hopkins University School of Medicine

Leif I. Solberg, MD
HealthPartners Institute

Soumya Swaminathan, MD
Indian Council of Medical Research, India

Viviane Tabar, MD
Memorial Sloan Kettering Cancer Center

Masayo Takahashi, MD, PhD
RIKEN Center for Developmental Biology, Japan

Suzanne L. Topalian, MD
Johns Hopkins University School of Medicine

Nicholas John White, KCMG, OBE, DSc, MD, FRCP, FMedSci, FBPhS, FRS
Mahidol University, Thailand

Flaura Koplin Winston, MD, PhD
The Children's Hospital of Philadelphia and University of Pennsylvania

Donald M. Yealy, MD
University of Pittsburgh

*Affiliations accurate at the date of election

CLASS OF 2017
Members Elected in 2018 (Class of 2018)

Hanan Mohamed S. Al-Kuwari, PhD
State of Qatar and Hamad Medical Corp., Qatar

Bruce Aylward, MD
World Health Organization, Switzerland

Francoise Barre-Sinoussi, PhD
Institut Pasteur, France

Linamara Rizzo Battistella, MD, PhD
São Paulo State Secretary for the Rights of Persons with Disabilities and University of São Paulo, Brazil

Yasmine Belkaid, PhD
National Institute of Allergy and Infectious Diseases, National Institutes of Health

James M. Berger, PhD
Johns Hopkins University School of Medicine

Richard E. Besser, MD
Robert Wood Johnson Foundation

Richard S. Blumberg, MD
Harvard Medical School and Brigham and Women's Hospital

Azad Bonni, MD, PhD
Washington University School of Medicine

Zulfiqar A. Bhutta, MB, BS, PhD, FCPS, FRCP, FRCPCH, FAAP
The Hospital for Sick Children and The Aga Khan University, Pakistan

Andrea Califano, Dr
JP Sulzberger Columbia Genome Center and Herbert Irving Comprehensive Cancer Center, Columbia University

Michael A. Caligiuri, MD
City of Hope National Medical Center

Clifton Watson Callaway, MD, PhD
University of Pittsburgh

Elias Campo, MD, PhD
University of Barcelona and Institute of Biomedical Research August Pi i Sunyer, Spain

Yang Chai, DMD, PhD, DDS
University of Southern California

Giselle Corbie-Smith, MD, MSc
University of North Carolina

Peter Daszak, PhD
EcoHealth Alliance

Michael S. Diamond, MD, PhD
Washington University School of Medicine

Susan M. Domchek, MD
University of Pennsylvania

Francesca Dominici, PhD
Harvard T.H. Chan School of Public Health and Harvard Data Science Initiative

Benjamin Levine Ebert, MD, PhD
Harvard Medical School

Jennifer Hartt Eliseeff, PhD
Johns Hopkins University

Robert L. Ferrer, MD, MPH
University of Texas Health Science Center

Robert M. Friedlander, MD, MA
University of Pittsburgh Medical Center

Ying-Hui Fu, PhD
University of California, San Francisco

William A. Gahl, MD, PhD
National Human Genome Research Institute, National Institutes of Health

Joshua A. Gordon, MD, PhD
National Institute of Mental Health, National Institutes of Health

Scott Gottlieb, MD
U.S. Food and Drug Administration

David Allen Hafler, MD, MSc
Yale School of Medicine

Evelynn Maxine Hammonds, PhD
Harvard University

David Newcomb Herndon, MD, FACS
University of Texas Medical Branch and Shriners Hospitals for Children

Steven M. Holland, MD
National Institute of Allergy and Infectious Diseases, National Institutes of Health

Amy Houtrow, MD, PhD, MPH
University of Pittsburgh

Jeffrey Alan Hubbell, PhD
University of Chicago

John P.A. Ioannidis, MD, DSc
Stanford University

Robert E. Kingston, PhD
Massachusetts General Hospital and Harvard Medical School

Ophir David Klein, MD, PhD
University of California, San Francisco

Alexander H. Krist, MD, MPH, FAAFP
Virginia Commonwealth University

John Kuriyan, PhD
University of California, Berkeley

Joy Elizabeth Lawn, MBBS, MPH, FRCP (Paeds), PhD, FMedSci
London School of Hygiene and Tropical Medicine, United Kingdom

Ellen Leibenluft, MD
National Institute of Mental Health, National Institutes of Health

Gabriel Matthew Leung, MD
University of Hong Kong, Hong Kong

Linda M. Liau, MD, PhD, MBA
University of California, Los Angeles

Keith Douglas Lillemoe, MD
Massachusetts General Hospital and Harvard Medical School

Xihong Lin, PhD
Harvard T.H. Chan School of Public Health

Catherine Reinis Lucey, MD
University of California, San Francisco

Ellen J. MacKenzie, PhD, MSc
Johns Hopkins Bloomberg School of Public Health

Martin A. Makary, MD, MPH, FACS
Johns Hopkins University School of Medicine and Johns Hopkins Bloomberg School of Public Health

Bradley A. Malin, PhD, FACMI
Vanderbilt University

George Mashour, MD, PhD
University of Michigan
Ann Carolyn McKee, MD  
Boston University School of Medicine and VA Boston Healthcare System

Barbara J. Meyer, PhD  
Howard Hughes Medical Institute and University of California, Berkeley

Matthew Langer Meyerson, MD, PhD  
Harvard Medical School and Dana-Farber Cancer Institute

Terrie E. Moffitt, PhD  
Duke University

Sean J. Morrison, PhD  
University of Texas Southwestern Medical Center

Charles Alexander Nelson III, PhD  
Boston Children's Hospital and Harvard Medical School and Graduate School of Education

Kunle Odunsi, MD, PhD, FRCOG, FACOG  
Roswell Park Comprehensive Cancer Center

Lucia Ohno-Machado, MD, PhD  
University of California, San Diego, School of Medicine

Jordan Scott Orange, MD, PhD  
Columbia University and New York-Presbyterian/Morgan Stanley Children’s Hospital

Beverley Anne Orser, MD, PhD, FRCP  
University of Toronto and Sunnybrook Health Science Centre, Canada

Lori J. Pierce, MD  
University of Michigan

Daniel E. Polsky, PhD  
University of Pennsylvania

Carol Propper, PhD  
Imperial College Business School, United Kingdom

Josiah “Jody” Rich, MD, MPH  
Brown University and The Miriam Hospital

Gene Ezia Robinson, PhD  
University of Illinois at Urbana Champaign

Hector P. Rodriguez, PhD  
University of California, Berkeley

Charles N. Rotimi, PhD  
National Human Genome Research Institute, National Institutes of Health

Ralph Lewis Sacco, MD, MS, FAAN, FAHA  
University of Miami

Judith A. Salerno, MD, MS  
New York Academy of Medicine

Nanette Frances Santoro, MD  
University of Colorado, Denver School of Medicine

Stuart L. Schreiber, PhD  
Harvard University

Arlene Sharpe, PhD, MD  
Harvard Medical School

Marie Celeste Simon, PhD  
University of Pennsylvania

Albert L. Siu, MD, MSPH  
Icahn School of Medicine at Mount Sinai

Claire Sterk, PhD  
Emory University

Susan Stone, DNSc, CNM, FACNM, FAAN  
Frontier Nursing University and American College of Nurse-Midwives

Sylvia Trent-Adams, PhD, RN, FAAN  
Office of the Surgeon General, U.S. Department of Health and Human Services

Kara Odom Walker, MD, MPH, MSHS  
Delaware Department of Health and Human Services

Peter Walter, PhD  
Howard Hughes Medical Institute and University of California, San Francisco

Xiaobin Wang, MD, MPH, ScD  
Johns Hopkins Bloomberg School of Public Health and Johns Hopkins University School of Medicine and Children’s Center

Ronald John Weigel, MD, PhD  
University of Iowa

Rachel M. Werner, MD, PhD  
University of Pennsylvania

Janey L. Wiggs, MD, PhD  
Harvard Medical School; Massachusetts Eye and Ear; and Broad Institute of MIT and Harvard

Teresa Woodruff, PhD  
Northwestern University

King-Wai Yau, PhD  
Johns Hopkins University School of Medicine

*Affiliations accurate at the date of election
2018 Nobel Laureates

Denis Mukwege

*Nobel Peace Prize*

Mukwege received the 2018 Nobel Peace Prize alongside Nadia Murad for “efforts to end the use of sexual violence as a weapon of war and armed conflict.” Mukwege was elected to the NAM in 2014.

Frances Arnold

*Nobel Prize in Chemistry*

Arnold received the 2018 Nobel Prize in Chemistry alongside George P. Smith and Sir Gregory P. Winter for work in “the directed evolution of enzymes.” Arnold was elected to the NAM in 2004. She is also a member of the National Academy of Sciences and the National Academy of Engineering. *Photo credit: Beavercheme2*

James P. Allison

*Nobel Prize in Physiology or Medicine*

Allison received the 2018 Nobel Prize in Physiology or Medicine alongside Tasuku Honjo for “discovery of cancer therapy by inhibition of negative immune regulation.” Allison was elected to the NAM in 2007. He is also a member of the National Academy of Sciences. *Photo credit: Bengt Nyman*
2018 Annual Meeting

Cancers: Can We Beat the Odds?
The scientific symposium of the 2018 Annual Meeting, titled “Cancers: Can We Beat the Odds?” examined cancer biology, prevention, treatment, and policy.

Held October 15, 2018, the symposium featured a keynote address on “Cancer Immunotherapy: The End of the Beginning” by Laurie Glimcher, president and CEO of Dana-Farber Cancer Institute (pictured left).

Dr. Glimcher’s keynote was followed by three expert panel discussions: “Cancer Prevention: Promise and Unrealized Potential. Half of All Cancers Could be Prevented—Why Aren’t They?” (moderated by Otis W. Brawley); “The Biology of Cancers: Challenges for Therapeutics” (moderated by Levi A. Garraway); and “Fighting Cancers: From Biology to Policy” (moderated by Mary C. Beckerle).

The symposium concluded with the 2018 President’s Forum on Affordable Medicines: Access, Innovation, and the Public Interest. The Honorable Alex M. Azar, Secretary of the U.S. Department of Health and Human Services, provided a keynote for the President’s Forum and used the occasion to announce a policy proposal related to transparent drug pricing. Following the keynote, NAM president Victor J. Dzau led a dynamic discussion among Senator Bill Cassidy (R-LA), Norman R. Augustine (Lockheed Martin Corporation), Gail K. Boudreaux (Anthem Inc.), Kenneth C. Frazier (Merc & Co, Inc.), and John M. O’Brien (U.S. Department of Health and Human Services).

Slidesets and video recordings from all presentations are available online at NAM.edu/AnnualMeeting2018.

The NAM is grateful to the 2018 scientific program planning committee:

- Story C. Landis, PhD (Chair), National Institute of Neurological Disorders and Stroke
- Mary C. Beckerle, PhD, Huntsman Cancer Institute and University of Utah
- Angela Diaz, MD, MPH, Icahn School of Medicine at Mount Sinai; and Mount Sinai Adolescent Health Center
- Elaine Fuchs, PhD, Howard Hughes Medical Institute and The Rockefeller University
- Douglas R. Lowy, MD, National Cancer Institute, National Institutes of Health
- Gilbert S. Omenn, MD, PhD, University of Michigan
- Charles Sawyers, MD, Howard Hughes Medical Institute and Memorial Sloan Kettering Cancer Center

The scientific symposium of the 2019 Annual Meeting, titled “The Evolution of Technology in Biomedical Science: Promises and Challenges,” will take place October 21 in Washington, DC. Registration for NAM members will open in May 2019; public registration will follow.
## In Memoriam

The National Academy of Medicine honors the life and work of members who passed away between January 1, 2018, and April 30, 2019.

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<th>Cairns Aitken</th>
<th>Daniel W. Foster</th>
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<td>Gunter Blobel</td>
<td>Paul Greengard</td>
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<td>Stuart Bondurant</td>
<td>Robert J. Haggerty</td>
<td>Ruth S. Nussenzweig</td>
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<td>Beatrix A. Hamburg</td>
<td>Arthur B. Pardee</td>
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<td>Thomas M. Jessell</td>
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<td>Colleen Conway-Welch</td>
<td>Lewis L. Judd</td>
<td>Lloyd H. Smith</td>
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<td>Minor J. (Jud) Coon</td>
<td>Morris J. Karnovsky</td>
<td>David Weatherall</td>
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<td>Ezra C. Davidson</td>
<td>Stephen I. Katz</td>
<td>Raymond L. White</td>
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<td>Stanley Falkow</td>
<td>Herbert D. Kleber</td>
<td>Charles B. Wilson</td>
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<td>Harold J. Fallon</td>
<td>Irving M. London</td>
<td>Edward Zigler</td>
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<td>John W. Farquhar</td>
<td>Eleanor E. Maccoby</td>
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Remembering Four Early Leaders of the IOM

David A. Hamburg, who served as president of the Institute of Medicine from 1975 to 1980, passed away on April 21, 2019. His death is a tremendous loss for the NAM and the National Academies.

As president of the IOM during its first decade of operation, Dr. Hamburg was instrumental in clarifying the role and focus areas of the organization. He laid the groundwork for productive relationships with Congress and federal agencies that remain fruitful to this day. Philip Handler, then president of the National Academy of Sciences, provided the following tribute to Dr. Hamburg at the conclusion of his term: “Under your leadership, the Institute of Medicine has been brought to maturity. It has earned a place in the Washington scene and become the instrument to which we aspired when it was created. Our country has yet a long way to go in the development of an accepted philosophy which will enable us to frame a consistent national health policy. Thanks to you, I am confident that the Institute of Medicine will make cardinal contributions to that process. We have enjoyed your boundless good humor, basked in the warmth of your compassion, and been stimulated by the keenness of your intellect. All of us are richer for your stay among us.”

A psychiatrist who served as chair of the department of psychiatry at Stanford University from 1961 to 1975, Dr. Hamburg had a lifelong commitment to global health, human rights, and the prevention of violence. As head of the Carnegie Corporation of New York from 1982 to 1997, he focused on improving educational outcomes for children in the United States and launched initiatives to prevent war and genocide. In 1996, he received the Presidential Medal of Freedom for his contributions to “understanding human behavior, preventing violent conflict, and improving the health and well-being of our children.”

Throughout his long career, Dr. Hamburg was a member of the U.S. Defense Policy Board, a member of President Clinton’s Committee of Advisors on Science and Technology, a founding advisor to the Nuclear Threat Initiative, and chair of two United Nations and European Union committees on the prevention of genocide, among many other distinguished appointments. He also served as president of the American Association for the Advancement of Science, a position recently held by his daughter, NAM Foreign Secretary Peggy Hamburg.

Dr. Hamburg was the author of numerous books on preventing violence in the U.S. and abroad. In 2015 he completed an autobiography titled A Model of Prevention: Life Lessons. Dr. Hamburg was preceded in death by his beloved wife and collaborator Beatrix Hamburg, a fellow psychiatrist and active member of the IOM/NAM.
Stuart Bondurant, who served as Acting President of the Institute of Medicine in 1991 and 1992, passed away on May 26, 2018. Dr. Bondurant provided steady leadership during the search for a successor to IOM president Samuel Thier—a pivotal contribution for which the organization remains deeply grateful. Dr. Bondurant retired as Dean Emeritus of the School of Medicine at the University of North Carolina, Chapel Hill, after a distinguished career that focused on improving medical education and advancing cardiac research. As head of the medical branch of the Artificial Heart-Myocardial Infarction Program of the National Heart Institute in 1966, he initiated the nation’s first organized research effort on heart attacks. Dr. Bondurant was devoted to improving health in his home state of North Carolina; he co-founded the North Carolina Institute of Medicine and the North Carolina Biotechnology Center and was a longtime chair of the North Carolina Governor’s Commission on the Reduction of Infant Mortality.

Irving London, the last surviving founding member of the Institute of Medicine, passed away on May 23, 2018. Dr. London headed a 1968 internal subcommittee that recommended the creation of an academy of medicine to serve alongside the National Academy of Sciences and National Academy of Engineering. Although his efforts contributed to the establishment of the Institute of Medicine in 1970, his vision of an autonomous National Academy of Medicine would not be realized until 2015. Dr. London served as a captain in the Medical Corps during World War II and was later assigned to the South Pacific as “physician for the Congressional delegation to the atom bomb tests” (MIT). In addition to his instrumental role in the early days of the IOM, he was founding director of the Harvard-MIT Health Sciences and Technology program and founding chair of the department of medicine at Albert Einstein College of Medicine. His own research centered on explaining the “molecular regulation of hemoglobin synthesis at the level of gene transcription and translation into protein” (MIT).

Harold (Hal) Fallon, the inaugural Home Secretary of the Institute of Medicine, passed away on November 17, 2018. Dr. Fallon served as Home Secretary from 1999 to 2004 and again from 2013 until 2015. In addition to chairing the Membership Committee for many years, Dr. Fallon completed lengthy terms on the Member Awards Committee and the Report Review Committee. He was instrumental in developing the Academy’s interest groups and served as founding chair, then member, of the Interest Group Monitoring Committee for nearly a decade. The NAM owes much to his service. Throughout his career, Dr. Fallon held appointments at the University of North Carolina, Chapel Hill, the National Institutes of Health, the Public Health Service, and the Medical College of Virginia. He served as Dean of the School of Medicine at the University of Alabama in Birmingham and was head of the American College of Physicians and the American Board of Internal Medicine.
Fellowships & Leadership Programs

The National Academy of Medicine administers five national and international fellowship programs, as well as the Emerging Leaders in Health and Medicine Program (described on page 24). Together, the NAM’s growing portfolio of fellowships and leadership programs is intended to position the next generation for leadership, innovation, and impact in health, medicine, and biomedical science.
Fellowships

The NAM administers five fellowships designed to cultivate the next generation of leaders in health, medicine, and biomedical science and engage them in the work of the NAM and the National Academies. These include the Robert Wood Johnson Foundation (RWJF) Health Policy Fellows Program—which after more than 40 years in operation is the Academy’s longest-standing program—as well as the FDA Tobacco Regulatory Science Fellowship, the Distinguished Nurse Scholar-in-Residence program, and seven subject-specific NAM Fellowships.

In 2018, the NAM launched two new international fellowships: the International Health Policy Fellowship in partnership with the Chinese University of Hong Kong, and the Fellowship in Global Health Leadership in partnership with the Hong Kong University School of Public Health.

2018 FDA Tobacco Regulatory Science Fellows

Frank Bandiera, PhD
University of Texas

Megan Hicks, MPH
South Carolina Tobacco-Free Collaborative

Catherine Kemp, MHA
Georgia State University

Mauricio Rangel-Gomez, PhD
University of Maryland

Samantha Reilly, PhD
Pennsylvania State University

Jamie Tam, PhD
University of Michigan

2018-2019 Distinguished Nurse Scholar-in-Residence

Lori Trego, PhD, CNM, FAAN
University of Colorado

2018-2019 RWJF Health Policy Fellows

Brutrinia Cain, JD, BSN
U.S. Department of Health and Human Services

Michelle Dennison, PhD, RD/LD
Oklahoma City Indian Clinic

Kirsten Johnson, MPH
Washington Ozaukee Public Health Department

Ellen Kurtzman, PhD, MPH, RN, FAAN
George Washington University

Daniel O’Neill, MA, MS
Change Healthcare Inc.

Kristin Paulson, JD, MPH
Center for Improving Value in Health Care

Samuel Stebbins, MD, MPH
Arlington County Department of Health and Human Services, Virginia

Carlos Williams, MD, MPH, MBA
U.S. Department of the Navy

Pictured opposite left to right: O’Neill, Williams, Stebbins, Cain, Paulson, Kurtzman, Johnson
FELLOWSHIPS & LEADERSHIP PROGRAMS

NAM Fellowships
2017-2019 Norman F. Gant/American Board of Obstetrics and Gynecology Fellow

**Ebony Carter, MD, MPH**
Washington University
2017-2019 James C. Puffer, M.D./American Board of Family Medicine Fellow

**Tammy Chang, MD, MPH**
Corner Health Center and RAHS School-based Health Centers, Ypsilanti, MI
2018-2020 James C. Puffer, M.D./American Board of Family Medicine Fellow

**Kameron Matthews, MD, JD, FAAFP**
Veterans Health Administration
2017-2019 Gilbert S. Omenn Fellow

**Ellen Eaton, MD, MSPH**
University of Alabama, Birmingham
2017-2019 American Board of Emergency Medicine Fellow

**Mahshid Abir, MD, MSc**
University of Michigan and RAND Corporation
2017-2019 Greenwall Fellow in Bioethics

**Neal Dickert, Jr., MD, PhD**
Emory University

2018-2020 Pharmacy Fellow

**Dima M. Qato, PharmD, MPH, PhD**
University of Illinois

2018-2020 Osteopathic Medicine Fellow

**Michelle Kvalsund, DO, MS**
Michigan State University

International Fellowships
2018-2020 International Health Policy Fellow

**Roger Chung, PhD, MHS**
The Chinese University of Hong Kong

2019-2020 NAM-HKU Fellow in Global Health Leadership

**Chinmoy Sarkar, BSc, Msc, PhD**
The University of Hong Kong
Awards

The National Academy of Medicine issues two major public awards annually: the Gustav O. Lienhard Award for Advancement of Health Care and the Rhoda and Bernard Sarnat International Prize in Mental Health. In addition, the NAM issues awards to NAM members and staff in recognition of exceptional service to the NAM and the National Academies.
The 2018 Lienhard Award was presented to Stuart Altman of Brandeis University. Over his 50-year career as an economist, Dr. Altman has made significant contributions to improve the health insurance system in the United States. During his tenure as deputy assistant secretary for planning and evaluation/health at the U.S. Department of Health Education and Welfare during the Nixon administration, Altman helped spur the growth of comprehensive managed care. Altman has acted as an adviser to five presidential administrations.

At Brandeis University, Altman founded the Schneider Institutes for Health Policy, a research center best known for developing the Social HMO, which integrated financing for acute services, long-term care, and social supports to provide more effective and coordinated care for elderly adults.

Altman and his colleagues also formed the Association for Health Services Research in 1981 to facilitate better research and support health policy decision-making. Now AcademyHealth, the organization has more than 4,000 members and hosts a prominent U.S. health services research conference.

Issued annually, the Lienhard Award recognizes outstanding national achievement in improving personal health care in the United States. Nominees are eligible for consideration without regard to education or profession, and award recipients are selected by a committee of experts convened by the Academy. The award is accompanied by a medal and $40,000, and the recipient is invited to deliver a lecture hosted by the NAM. The 2018 selection committee was chaired by Glenn D. Steele, Jr., Chairman of xG Health Solutions, Inc.

The Lienhard Award is funded by an endowment from the Robert Wood Johnson Foundation. Gustav O. Lienhard was chair of the foundation’s board of trustees from the organization’s establishment in 1971 to his retirement in 1986—a period in which the foundation moved to the forefront of American philanthropy in health care.

For more information, visit NAM.edu/Lienhard.
Rhoda & Bernard Sarnat International Prize in Mental Health

The 2018 Sarnat Prize was awarded to Kenneth Wells, whose work helped establish the field of quality of care and outcomes assessment within psychiatry and mental health. Wells was also honored for his work to foster a generation of clinical investigators and mental health system leaders, and championing partnered, participatory research to advance equity for under-resourced populations.

Wells has been integral in a number of studies that have changed practice guidelines for mental health, including the Medical Outcomes Study, which showed that depression is as strong a contributor to impairment in functioning and quality of life as most chronic conditions with important gaps in quality of care in primary care settings. Wells also helped lead a community-partnered participatory research initiative called Community Partners in Care, which evaluated an expanded model of depression care training for providers in health care and community-based programs in underresourced communities.

Since 1992, the Sarnat Prize has been presented to individuals, groups, or organizations that have demonstrated outstanding achievement in improving mental health. The prize recognizes—without regard for professional discipline or nationality—achievements in basic science, clinical application, and public policy that lead to progress in the understanding, etiology, prevention, treatment, or cure of mental disorders, or to the promotion of mental health. The Sarnat Prize is accompanied by a medal and $20,000.

The award is supported by an endowment created by Rhoda and Bernard Sarnat of Los Angeles. The 2018 selection committee was chaired by Margarita Alegria, Harvard Medical School. Learn more at NAM.edu/Sarnat.
NAM Member Awards

Walsh McDermott Medal

Elaine L. Larson received the 2018 McDermott Award in recognition of distinguished service to the National Academies over an extended period. Since her election in 1986, Larson has served on approximately 50 projects, including 17 committees, councils, and boards. Larson served on consensus study committees covering diverse topics such as environmental health content in nursing practice, school health programs in grades K-12, the Gulf War and veterans’ health, and protective equipment for health care workers to prevent transmission of viral respiratory infections. To all activities, Larson brought intense dedication to excellence, intellectual rigor, and unwavering commitment to producing unbiased reports to shape national and international policy and practice.

David Rall Medal

Hedvig Hricak received the 2018 Rall Award in recognition of distinguished leadership as chair of a study committee or other activity. Her contributions to reports of the National Academies are numerous and noteworthy and have examined a variety of topics, such as nuclear medicine, cancer clinical trials, radiation from medical diagnostic procedures, and diagnostic error in medicine. Under Hricak’s leadership as chair, the Committee on State of the Science in Nuclear Medicine produced an influential report in 2007 with five strong recommendations, most of which have since been carried out. Hricak treasures the NAM as a valuable stimulus for improving science in medicine, the quality of health care, and the state of public health in the U.S. and around the world.

Adam Yarmolinsky Medal

Nicholas A. Peppas received the 2018 Yarmolinsky Award, which recognizes a member from a discipline outside the health and medical sciences who has contributed to the mission of the NAM over a significant period. Peppas is a true pioneer in the development of principles in biomedical and chemical engineering that paved the way for groundbreaking scientific advances with broad ranging applications. Through his service on the NAM Membership Committee and the Subcommittee on International Members, Peppas worked tirelessly to recruit and involve members from outside of health and medical sciences. His unique ability to bring together researchers from disparate fields and his revolutionary research on biomedical and chemical engineering have had a tremendous and lasting impact on the NAM and the nation’s scientific progress.
Staff Awards

Each year, the NAM presents three Cecil Awards recognizing and celebrating current and/or recent staff whose sustained service has contributed importantly to progress toward the NAM Mission—to improve health for all by advancing science, accelerating health equity, and providing independent, authoritative, and trusted advice nationally and globally. Each award is accompanied by $4,000, a commemorative medal, and a certificate presented by the NAM president.

2018 Sandra H. Matthews Cecil Award for Administrative Excellence

Morgan Kanarek
Chief of Staff
National Academy of Medicine

2018 Cecil Award for Individual Excellence

Amy Geller
Senior Program Officer
Health and Medicine Division, National Academies

2018 Cecil Award for Excellence of a Group/Team

Elle Alexander
Heather Cook
Cypress Lynx

Amanda Nguyen
Leslie Sim

Roundtable on Obesity Solutions
Health and Medicine Division, National Academies
The NAM budget supports two main areas of activity: General Operations and Program. General Operations includes the Executive Office as well as Development, Communications, Finance, Program Development, Membership and Council Services, and joint National Academies expenses.

Program includes Culture of Health, Clinician Well-Being, Vital Directions, and the Leadership Consortium for a Value and Science-Driven Health System, among other projects and activities. Fellowships are a distinct program and are reflected separately in the chart above.
Donor Appreciation

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.
2018 Donor Recognition

In 2018, contributions from private donors helped the National Academy of Medicine provide expert advice to the nation, inspire bold ideas around the globe, and build leadership capacity for the future of health and health care. We are deeply grateful for the generous support. Every gift helps the NAM promote its core mission and respond to urgent priorities. Highlights from the year include:

- **$10.8 million** in new commitments
- **$4.9 million** for the Healthy Longevity Global Grand Challenge
- **$1.5 million** for the Action Collaborative on Countering the U.S. Opioid Epidemic
- **596 NAM members** and friends contributed $535,120 to the Annual Fund
- **29% of NAM members** gave to the NAM or the Committee on Human Rights
- **New Einstein Society Members** (cumulative giving of $100,000 or more)
  - David Baltimore
  - Barry and Bobbi Coller
  - Jane Henney and Robert Graham.
- **New NAM Society Members** (cumulative giving of $20,000)
  - Mary and Dennis Bier
  - Nathaniel E. David
  - Norman and Deann Gant
  - Sid Gilman and Carol Barbour
  - James S. and Judith M. Marks
  - Paul A. Offit
  - Palmer and Susan Taylor
  - David Walt and Michele May
  - Myron and Linda Weisfeldt
  - Keith R. Yamamoto

Philanthropic gifts and grants make it possible for the NAM to fulfill its mission. We greatly appreciate all of the support received from our many members and friends.
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 Bren
William R. and Rosemary B. Hewlett*
Peter O’Donnell, Jr.
Fritz J. and Dolores H. Russ Prize Fund
of the Russ College of Engineering and Technology at Ohio University
Dame Jillian Sackler

$1 million to $5 million
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$500,000 to $1 million
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Anthony J. Yun and Kimberly A. Bazar

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W.O. Baker*
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Clarence S. Coe*
Rosie and Stirling A. Colgate*
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Robin K. and Rose M. McGuire
Janet and Richard M.* Morrow
Clayton Daniel and Patricia L. Mote
Sara Lee and Axel Schulp
Anthony J. Yun and Kimberly A. Bazar

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Janet and Richard M.* Morrow
Clayton Daniel and Patricia L. Mote
Sara Lee and Axel Schulp
Anthony J. Yun and Kimberly A. Bazar

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Dyanne D. Affonso
Frances H. Arnold
Jack D. Barchas
Paul Berg
Kenneth I. Berns
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Floyd E. Bloom

Anonymous (2)
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Robert C.* and Marilyn G. Forney
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Robert and Joan Wertheim
Maw-Kuen Wu
Wm. A. Wulf
Tilahun D. Yilma
Michael and Leslee Zubkoff
Anonymous (3)

* = deceased

Pictured opposite: Donors gather at the 2018 Annual Meeting
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In Memory of Ben A. Barres – Michael N. Shadlen
In Memory of Stuart Bondurant – Raymond P. White, Jr.
In Memory of William H. Bowen – Deborah Greenspan, John S. Greenspan
In Memory of David S. Greer – Vincent Mor
In Memory of Beatrix A. Hamburg – Jonathan Genn
In Memory of James P. Hughes – James M. Hughes
In Memory of Mitsuo Inouye – Sharon K. Inouye
In Memory of Theresa Manson – JoAnn E. Manson
In Memory of Stephen J. Ryan – Paul and Jennifer Lee
In Memory of Geoffrey Shellam – Barry J. Marshall
In Memory of Adam Yarmolinsky – Alexander M. Capron

In Honor of Arthur L. Beaudet – Huda Y. Zoghbi
In Honor of Richard S. Blumberg – Louis Blumberg
In Honor of Chiquita Boston, Donna Duncan, Margaret McCoy, and Jamal Samuel
   – Elena and Peter Fuentes-Afflick
In Honor of Robert L. Brent – Frank A. Chervenak
In Honor of Harvey V. Fineberg – Haile T. Debas
Loyalty Society

In recognition of members and friends who have made gifts to the National Academies of Sciences, Engineering, and Medicine for at least 20 years. 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.

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Joel Moses

* = deceased
Pictured below: Charter Society member and NAM Councilor Elena Fuentes-Afflick; NAM Society, Loyalty Society, and Charter Society member Catherine Adams Hutt; and NAM Councilor Angela Diaz

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John H. Moxley III  
Earll M. Murman  
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Jaya and Venky Narayanamurti  
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Elena and Stuart Nightingale  
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