

20,000+

PARTNERS IN THE GLOBAL STEM ALLIANCE

MEMBERS OF THE ACADEMY ARE YOUNG, PROMISING SCIENTISTS. THEY ARE STUDENTS, TEACHERS, AND **POSTDOCTORAL FELLOWS**

MILLION PEOPLE REACHED BY THE **ACADEMY'S PROGRAMMING** AND PUBLISHING EACH YEAR



ANNALS OF THE NEW YORK ACADEMY OF SCIENCES



QUALITY STEM INSTRUCTION **DELIVERED TO** STUDENTS IN **100+ COUNTRIES** 100+ 1 60,000+
SCIENTIFIC SOCIAL MEDIA FOLLOWERS **EVENTS ANNUALLY**

SOCIAL MEDIA FOLLOWERS f in **y** o

Building a Legacy of Optimism for the 21st Century

At a time when public trust in science is being called into question, there has never been a more crucial moment for the World's Smartest Network® to champion its worth.

Anti-vaxxers, climate change deniers and science skeptics of all stripes have dominated the headlines this year, challenging decades of scientific evidence and undermining the development of sensible policies governing health and sustainable development. It would be easy to become discouraged in such an atmosphere, but with the advantage of a 200+ year old perspective, we at the New York Academy of Sciences hold a more optimistic view.

Scientists share many characteristics: tenacity (some would say stubbornness), a willingness to pursue less travelled paths of inquiry, the confidence to fail, and in doing so, to contribute to the knowledge needed to attain success. But what drives scientists to take risks, and to persevere in the face of failure, all in pursuit of an often elusive goal?

From our point of view it's that scientists and engineers have never met a problem they didn't want to solve. In fact most scientists—contrary to popular stereotypes—are inherently optimistic people. And by recognizing and supporting that intrinsic optimism, the New York Academy of Sciences is building a legacy for the 21st century: bringing together the brightest and best minds to work toward solutions for the challenges that confront us.

During the Academy's 202nd year more than 10,300 investigators from 61 countries came through our doors, either in person or virtually, to participate in over 100 conferences and symposia. The topics covered included some of the most pressing problems facing humanity today, ranging from the practical — such as climate change, to the speculative — such as the nature of reality. Some participants were students and early career investigators, and others were award-winning researchers like 2018 Nobel Laureate Dr. James P. Allison, who spoke about closing the gap between innovative cancer research and on-the-ground treatment. Other leading experts discussed climate change, the growing impact and societal implications of artificial intelligence (AI), the age-old problem of science denialism, sources of alternative energy, helicopters on Mars, advances in neurobiology, genomics and molecular medicine, the list goes on.

The Members of the World's Smartest Network® are an incredibly diverse group; they reside in over 100 countries, pursue the full gamut of scientific and professional disciplines, and represent a broad spectrum of ethnicities and cultural traditions. But what unites them all is a thirst for knowledge, and a common desire to make the world a better place.

This is our legacy. From the first geological survey of New York State in 1836 — to the groundbreaking conference on antibiotics in 1946 — to the first major AIDS symposium in 1983 — to this year's "Science for Decision-Making in a

Warmer World", which covered the latest findings on climate change and its implications for New York City — the Academy has been the place for optimists to blaze new trails.

As we enter our 203rd year, we plan to expand and build upon this legacy by mobilizing our network around efforts to close the skills gap.

For the Academy this means supporting scientists and engineers at all phases of their careers. This begins with our Global STEM Alliance mentoring programs, which enable students from around the world to form teams, connect with professional STEM mentors, and design science-based solutions to global challenges.

It continues with the Academy's Science Alliance program, which provides professional development training, career resources, and networking opportunities for 10,000+ graduate students and postdocs from over 35 participating universities and research institutions. And it culminates with programs that celebrate and support brilliant researchers, from the Blavatnik Awards for Young Scientists, now recognizing breakthrough research in the US, UK, and Israel, to the Takeda-sponsored Innovators in Science Award, awarded annually to a promising early-career scientist and an outstanding senior scientist, and the Interstellar Initiative, created in partnership with the Japan Agency for Medical Research and Development.

Yes, these are uncertain times, and in some respects the challenges we face seem more daunting than ever before. But during my time as the chief executive officer of the Academy, I have never felt more inspired and optimistic about the quality of young people entering the STEM pipeline, their tenacity and ingenuity in problem-solving, and their commitment to leaving the world a better place than they found it. These are the scientists, engineers, and innovators who will shape our 21st century.

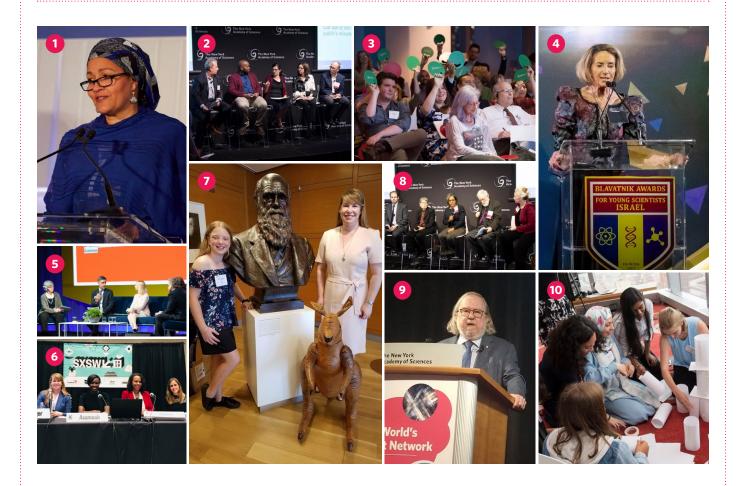
Welcome to the legacy of optimism.

ELLIS RUBINSTEIN

President and CEO
New York Academy of Sciences



In 2019 We Celebrated the Extraordinary!

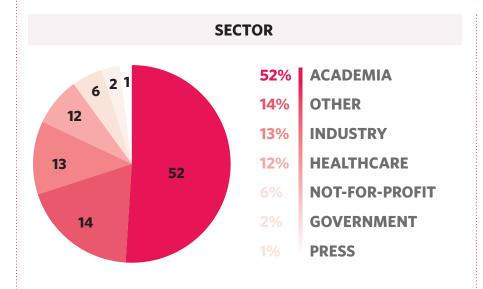


- United Nations Deputy Secretary General Amina Mohammed addresses more than 250 guests at the 2018 Annual Gala.
- 2. Moderator Jay Flynn (Wiley Research) with science reporters Dr. Nsikan Akpan (PBS NewsHour), Amanda Aronczyk (WNYC-AM/FM), Amy Dockser Marcus (*The Wall Street Journal*), and David Freeman (NBCNews.com) debate how the media reports on science.
- **3.** Academy Members participate in our 200th Annual Members Meeting.
- 4. Dr. Marcia McNutt, President of the US National Academy of Sciences, is a featured speaker at the "2019 Blavatnik Awards for Young Scientists in Israel" ceremony.

- 5. Dr. Jennifer Costley, Director for Physical Sciences, Sustainability and Engineering hosts a panel discussion about urban infrastructure at "Smart Cities New York".
- 6. On International Women's Day Dr. Brooke Grindlinger, Chief Scientific Officer, hosts a discussion about big data and privacy in healthcare with an all-female expert panel at the "South By Southwest Conference".
- Aussie, Aussie, Aussie! A budding young scientist from Australia (left) meets Charles Darwin, fellow countrywoman Dr. Brooke Grindlinger, and Skippy the kangaroo at the "Global STEM Alliance (GSA) Summit".

- 8. The NYC Panel on Climate Change celebrates their 10th anniversary and the release of their latest recommendations.
- Nobel Laureate Dr. James P. Allison is a featured speaker at the Academy's "Frontiers in Cancer Immunotherapy" conference.
- **10.** Young Members in the Junior Academy and 1000 Girls, 1000 Futures participate in a workshop at the GSA Summit.

Academy Conference Participants





45%

OF SPEAKERS AT ACADEMY EVENTS WERE WOMEN

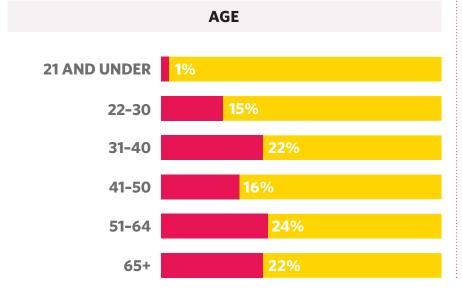
PARTICIPATION IMPACT

89%

GAINED NEW KNOWLEDGE IN SCIENCE, TECHNOLOGY, ENGINEERING, OR MATH (STEM)

63%

HAD A VALUABLE
DISCUSSION WITH AT
LEAST ONE NEW CONTACT



UNDERREPRESENTED MINORITIES (URMs)

12%

UNDERREPRESENTED MINORITIES*

*NATIONAL AVG. OF URMs IN ACADEMIA IS 3.8% **30% HISPANIC**

11% AFRICAN AMERICAN

0% NATIVE AMERICANS / ALASKAN NATIVES

2.5% US PACIFIC ISLANDERS

1.5% HAWAIIAN NATIVES

55% OTHER

5 Data as of August 2018

Convening for Impact: Landmark Conferences

Our 2018–2019 conference season reflected yet another year of robust participation, with more than 10,300 global investigators from 61 countries convening virtually and in person at 106 meetings.

Groundbreaking new discoveries across topics as diverse as neuroimmunology, antimicrobial resistance, the nature of reality, climate change, science denial, and deep learning in medicine served to accelerate scientific discovery, and we accelerated our Science Alliance programming for the next generation of scientists and engineers.

"Frontier in Cancer Immunotherapy" convened leading researchers, clinicians, and academic, industry, and government stakeholders to share cutting-edge research and discuss strategies to help close the gap between research discoveries and improved treatments for cancers. Focus areas included the biological mechanisms underlying combination drug therapies, bispecific antibodies, and other emerging modalities for delivery of combination therapies, as well as a discussion of the importance of biomarkers and effective clinical trial design.

Dr. James P. Allison (MD Anderson Cancer Center), a 2018 Nobel Laureate in Physiology or Medicine, delivered the keynote address describing his discovery that the immune system could attack cancer by blocking the protein CTLA-4 with a specially designed antibody. Treatments developed from Allison's work have extended the lives of thousands of people with cancer. His research is now focused on applying this therapeutic approach to additional types of cancer that currently are not responsive to immunotherapy.



AI AND HEALTHCARE

Data analysis for medical research is no longer restricted to the doctor's office or the traditional clinical trial. Health outcomes may be predicted by information from wearable devices, at-home genetic testing kits, insurance databases, web searches, or even a cell phone's GPS. As a result, business models in healthcare are experiencing a fundamental period of disruption, and new players are entering the space from tech, e-commerce, and beyond. But with this integration of big data comes a fresh set of ethical concerns, as those lengthy user agreements that are easily scrolled past might enroll individuals into a study — unbeknownst to them.

In partnership with Johnson & Johnson and the NYU School of Medicine, the Academy presented the conference "Healthcare in the Era of Big Data: Opportunities and Challenges" to explore the ethical concerns related to the application of big data in healthcare settings.

Johnson-Johnson



To share the lessons learned with a broader audience, the Academy organized a panel for the "2019 South by Southwest Conference" in Austin, Texas competitively selected out of 5,500+ entries. The discussion "Preventing the Cambridge Analytica of Health Data" explored the uncertain ethical landscape that accompanies the big data revolution as more tech companies cash in on personal health information. The Academy's Chief Scientific Officer, Dr. Brooke Grindlinger moderated a thought-provoking conversation on how to balance innovation and privacy. She was joined by Verily Life Sciences' Senior Counsel, Afia Asamoah, JD, MPP; Vice President of 2M Research, Dr. Regina James; and world-renowned bioethicist Dr. Jennifer Miller from Yale University School of Medicine.

SCIENCE IN SOCIETY

In response to the complex and pressing global challenge of denial of scientific facts, the Academy presented the conference "Science Denial: Lessons and Solutions" with grant support from the Sloan Foundation. Panelists included the world's leading communications, political science, psychology, and behavior researchers along with historians, public health officials, and science outreach experts delving into the history and cultural motivations of, challenges presented by, and future solutions to science denial.





CLIMATE CHANGE IMPACT AND MITIGATION

Marking the 10-year anniversary of a successful partnership between the New York City Panel on Climate Change (NPCC), the City of New York, and Annals of the New York Academy of Sciences, "Science for Decision-Making in a Warmer World: 10 Years of the NPCC" brought together climate scientists with city planners, industry experts, policymakers, and representatives of nongovernmental organizations engaged in climate mitigation efforts. The summit covered the latest findings of the NPCC and their implications for New York. Speakers and panelists presented examples of how the findings have been translated into resiliency policies that are shaping the future of the City and explored the larger role of cities, the private sector, and other key stakeholders in tackling this complex issue.

The recommendations of the NPCC — in three extensive reports in 2010, 2015, and 2019 published as special issues of *Annals of the New York Academy of Sciences* — have been incorporated into tangible policies that are helping the City to withstand the impacts of a changing climate in the decades to come.

Climate Change Adaptation in New York City: Building a Risk Management Response: New York City Panel on Climate Change 2010 Report.

Ann NY Acad Sci 1169: 1-354.

Building the Knowledge Base for Climate Resiliency: New York City Panel on Climate Change 2015 Report.

Ann NY Acad Sci 1336: 1-150.

Special Issue: Advancing Tools and Methods for Flexible Adaptation Pathways and Science Policy Integration: New York City Panel on Climate Change 2019 Report.

Ann NY Acad Sci 1439: 1-311.



Supporting Research in the Service of Humanity

The New York Academy of Sciences Nutrition Institute — a leading authority on food safety, food security, and micronutrient deficiencies in early childhood, adolescence and the elderly — made significant progress in 2019.

On food safety, the Institute held a scientific symposium on minimizing the risk of antimicrobial resistance in animal agriculture, which was covered by several agricultural media outlets. This was followed by a launch of a Special Issue published in the *Annals of the New York Academy of Sciences* addressing the impact of antimicrobial resistance on human, animal and environmental health.

In other work, the Institute continued to build the Nutrition Modeling Consortium, meant to help decision makers in low- and middle-income countries improve the effectiveness and efficiency of their nutrition policies and programs by using mathematical optimization.

Related to its work on micronutrient deficiencies, the Institute hosted two launch events for a series of Special Issues published in the *Annals*. The first presented conclusions of three expert committees on folate, thiamine and vitamin D deficiencies, while the second presented findings that support and enhance the WHO's recommendations on multiple micronutrient supplements (MMS) during pregnancy.

Further strides were made on the MMS front, as the Institute shifted from consensus building among MMS experts to planning the implementation of MMS on a global scale, in collaboration with UNICEF, among others. The Institute also supported a major research and implementation effort to reduce the global burden of thiamine deficiency.

Finally, this year saw the completion of the Institute's last grant cycle, devoted to exploring the impact of occupational status on nutrition in adolescent women.



POLICY GROUP

The Academy continues to serve in an advisory capacity for two clean energy proof-of-concept centers (POCCs) funded by the New York State Energy Research and Development Authority (NYSERDA), with the goal of helping inventors and scientists turn clean technology ideas into successful companies. The Academy also created a metrics and evaluation framework to demonstrate the impact of the POCCs over time.



Innovators in Science Award

The Academy completed the second year of the **Innovators in Science Award** launched in 2017 in partnership with Takeda Pharmaceuticals. This year, the Award program recognized exceptional scientists in the field of regenerative medicine from a pool of 127 nominations from 22 countries across five continents. Equally diverse were the scientific sub-disciplines of the nominees that included such fields as tissue engineering, cell reprogramming, and organoid development. In the fall of 2018, the Award's distinguished Jury selected one Early-Career Scientist Winner and one Senior Scientist Winner who each received a \$200,000 prize to support their commitment to research. The Award Winners' accomplishments were recognized by the Academy, Takeda and scientific luminaries at a glittering ceremony and scientific symposium held in Japan in April, 2019.





AWARD CEREMONY

On April 25, 2019, Takeda and the Academy hosted the *Innovators in Science Award* Ceremony in Tokyo, Japan, attended by government and philanthropic leaders, eminent scientists, and industry leaders. The 2019 Award Winners, Dr. Shruti Naik and Dr. Michele De Luca, along with guests from around the world enjoyed an evening of celebration at The Peninsula Hotel, Tokyo, situated adjacent to the Imperial Palace. The evening featured elements of Japanese tradition combined with world-renowned hospitality for a memorable celebration of scientific legacies and rising talent in the field.

"We are committed to external innovation and believe that the best ideas often come from those not afraid to challenge conventional wisdom."

-Christophe Weber, President and CEO, Takeda



AWARD SYMPOSIUM

The award ceremony was followed the next day by the "Frontiers in Regenerative Medicine: 2019 Innovators in Science Award Symposium," held at Shonan Health Innovation Park.

Innovations in stem cell research spanning the lab to the clinic were on full display at the Symposium, attended by a global audience of scientists, students, and the general public. Guests were treated to updates about the latest advances in epithelial stem cells from the 2019 Award Winners as well as innovations in regenerative medicine from distinguished speakers and panelists. Keynote Speaker and Nobel Prize Winner Dr. Shinya Yamanaka opened the day with a discussion on advances in induced pluripotent stem cell technology. Drs. Masayo Takahashi and Hiromitsu Nakauchi followed with updates on retina repair and hematology, and Dr. Austin Smith presented his research on pluripotency and stemness. The day concluded with a panel composed of the Award's Scientific Advisory Council and Jury on the future of regenerative medicine.

"The field of regenerative medicine is a very exciting one. The transformative power of cell therapies will enable a new generation of medicines with curative potential, for patients around the globe."

-Andrew Plump, President, Research & Development Takeda

RIGHT TOP: A violin and koto duo entertains guests during the cocktail reception and dinner at the 2019 Innovators in Science Award Ceremony.

RIGHT MIDDLE: All smiles as the 2019 Innovators in Science Award Winners snap a selfie with Nobel Laureate Dr. Shinya Yamanaka at the ceremony dinner.

RIGHT BOTTOM: 2019 Winners receive a medal and US\$200,000 for excellence in regenerative medicine.

LEFT: (From left to right) Academy Chief Scientific Officer **Dr. Brooke Grindlinger**, General Manager of Shonan Health Innovation Park **Toshio Fujimoto**, Senior Scientist Winner **Dr. Michele De Luca**, Early-Career Scientist Winner **Dr. Shruti Naik**, Takeda President and CEO **Christophe Weber**, and Takeda President of Research & Development **Dr. Andrew Plump** attend the medal ceremony at The Peninsula Hotel, Tokyo.



Blavatnik Awards for Young Scientists

Since the inception of the Blavatnik Awards for Young Scientists in 2007, the introduction of the National Awards in 2014, and the successful expansion of the Blavatnik Awards to Israel and the United Kingdom in 2017, the program has continued to grow with over 3,000 scientists and engineers nominated by over 300 institutions. By the close of 2019, the Blavatnik Awards for Young Scientists will have awarded \$8.4 million to 284 honorees from more than 45 countries, representing 35 scientific disciplines.



The 2019 Blavatnik Awards in the United Kingdom invited 135 academic and research institutions across England, Scotland, Wales, and Northern Ireland, along with the Awards' UK Scientific Advisory Council, to nominate their most promising young scientists. From among the 83 nominations received, the Jury named three Laureates who each received US\$100,000 in unrestricted funds: **Dr. Philipp Kukura** (University of Oxford), **Dr. Ewa Paluch** (University College London, University of Cambridge), and **Dr. Konstantinos Nikolopoulos** (University of Birmingham). Two nominees in each award category of Life Sciences, Physical Sciences and Engineering, and Chemistry were named Blavatnik Finalists, receiving US\$30,000 each in unrestricted funds. This second cohort of UK honorees was celebrated at the 2019 Blavatnik Awards UK Ceremony held at London's Victoria and Albert Museum on March 6, 2019 with 210 guests in attendance. Nobel Laureate **Prof. John O'Keefe** from University College London served as Master of Ceremonies.

CURE, CREATE, INNOVATE: FEATURING THE 2019 BLAVATNIK AWARDS UK HONOREES

The morning following the March 6 Ceremony, the Laureates and Finalists of the 2019 Blavatnik Awards for Young Scientists in the UK shared their cutting-edge research with the general public at an open symposium at London's Science Museum. The full-day symposium covered topics including cybersecruity, genome editing, the mysteries of the atom, and the complexities of the human brain. 2018 Blavatnik Awards UK Life Sciences Laureate, Dr. M. Madan Babu, hosted the closing panel dedicated to topics related to the impact of Brexit on UK Science, leadership, and gender and diversity, in scientific research. An Academy eBriefing from the symposium was published in June 2019.







THE BLAVATNIK AWARDS IN ISRAEL

In Israel, the New York Academy of Sciences in collaboration with The Israel Academy of Sciences and Humanities, administers the Blavatnik Awards in Israel, which in this second year received 33 nominations from seven universities. A distinguished Israeli Jury selected the three Laureates — **Dr. Moran Bercovici** (Technion - Israel Institute of Technology), Dr. Michal Rivlin (Weizmann Institute of Science), and Dr. Erez Berg (Weizmann Institute of Science). To launch a new partnership between The Israel Academy of Sciences and Humanities, the US National Academy of Sciences, and the Blavatnik Family Foundation, Israel's President Reuven Rivlin hosted a reception at his official residence in Jerusalem on the morning of the April 7 Ceremony. The three 2019 Blavatnik Israel Laureates and representatives from the New York Academy of Sciences were invited to attend the reception. Later that evening, the Awards Ceremony was held at the Israel Museum in Jerusalem with over 140 guests in attendance, including prominent leaders from Israel's academic, business, governmental, and philanthropic communities. The Laureates were each presented with medals and US\$100,000 in unrestricted funds. Dr. Marcia McNutt, the President of the US National Academy of Sciences, served as keynote speaker for the evening.



THE BLAVATNIK NATIONAL AWARDS CEREMONY

The 2018 Blavatnik National Awards Ceremony was held on September 24, 2018 at the American Museum of Natural History, where more than 200 guests from academia, business, and media honored 28 National Finalists and three National Laureates — **Dr. Janelle Ayres** (The Salk Institute for Biological Studies), **Dr. Sergei V. Kalinin** (Oak Ridge National Laboratory), and **Dr. Neal K. Devaraj** (University of California San Diego). Dr. Marc Tessier-Lavigne, President of Stanford University, served as Master of Ceremonies. The Laureates were each presented with medals and US\$250,000 in unrestricted funds.

The 2019 Blavatnik National Awards received a record 343 nominations from 169 of the top academic and research institutions across 44 states. The 31 Finalists were announced on May 29, 2019, and the three 2019 National Laureates — **Dr. Emily Balskus** (Harvard University), **Dr. Heather J. Lynch** (Stony Brook University) and **Dr. Ana Maria Rey** (University of Colorado Boulder) — were announced on June 26, 2019. This was the first time in the history of the Blavatnik Awards that all three National Laureates selected by the Jury were women.



THE BLAVATNIK REGIONAL AWARDS

The 2018 Blavatnik Regional Awards received 125 postdoctoral nominations from 22 academic and research institutions across New York, New Jersey, and Connecticut. Three winners, all outstanding female scientists, **Dr. Shruti Naik** (The Rockefeller University, now at NYU School of Medicine), **Dr. Lu Wei** (Columbia University, now at CALTECH), and **Dr. Lingyan Shi** (Columbia University) and six finalists were honored and presented with medals and a total of US\$150,000 in unrestricted funds during the Academy's Annual Gala on November 5, 2018.



THE BLAVATNIK SCIENCE SYMPOSIUM

The Academy hosted the fifth annual "Blavatnik Science Symposium" on July 16 and 17, 2018. More than 100 distinguished scientists, academic luminaries, business entrepreneurs and industry professionals from diverse disciplines participated in the two-day event. Attendees included the 2018 Blavatnik Awards honorees from the USA, UK, and Israel, as well as Blavatnik Award honorees from previous years who remain active members of the Blavatnik Awards community. Also in attendance were recipents of the Blavatnik Fellowship Life Science Entrepreneurship from Harvard, Yale, and Stanford Universities. Representatives from Harvard University's Blavatnik Biomedical Accelerator joined the symposium and hosted the symposium's first session dedicated to scientific entrepreneurship and startup companies. Suzanne Lee, fashion designer and founder of the company Modern Meadow gave the dinner keynote address on "Biofabrication: Growing the Future". Guerilla Science conducted an interactive social media skills workshop entitled "Social Media for Science Communication and Public Engagement."

√CE OSIUM

The New York



Interstellar Initiative

ALIGNING YOUNG STARS OF SCIENCE TO TACKLE THE WORLD'S MOST CRITICAL MEDICAL CHALLENGES

The Interstellar Initiative, a program developed by the Japan Agency for Medical Research and Development (AMED) and the New York Academy of Sciences, aims to increase international and interdisciplinary collaboration between scientists early in their careers. The initiative brings together Early-Career Investigators (ECIs) from around the world, selected via a competitive application process, and teams them with their peers in related but distinct disciplines. With the guidance of leading senior researchers, each team develops a grant proposal centered on a novel scientific research question — the different perspectives of their teammates allow them to think creatively, with the ultimate goal that through such teamwork we catalyze scientific advancement.

High-caliber mentors were recruited for each round of the *Interstellar Initiative*, and all were highly engaged and enthusiastic about the program. Each year, all mentors and accepted ECIs participate in a series of two workshops that convene at the Academy, where they meet within groups and develop collaborative research proposals. Modest funding is provided by AMED to each team to continue their collaborations between the workshops, and they submit progress reports for mentor review leading to the second workshop. Top teams receive a non-monetary award at each workshop. Following the second workshop, the teams are strongly encouraged to submit their proposals for funding.

The program launched its first round in 2017, and the second round was held from 2018-2019 in the disciplines of cancer and neuroscience, with an additional focus on artificial intelligence and its application to medicine. The first workshop in the 2018-2019 series was held in June 2018, and the group reconvened for a second workshop in January 2019. It included keynote lectures from **Dr. Russ B. Altman**, Stanford University on applications of data science in pharmacology, and from **Dr. Mahendra Rao**, MBBS, on grant writing. The teams were then able to continue work on their proposals, further refining them with the guidance of mentors, and at the end of the workshop they presented their updates for additional feedback. We look forward to seeing how their projects continue to develop!

We have now launched the 2019–2020 round of the *Interstellar Initiative*, which will focus on healthy longevity, with the call for applications open from March to May, 2019. We received applications from 30 countries around the world, and recruited an excellent group of mentors. We look forward to welcoming the new participants at the first workshop this fall.

The goal of the *Interstellar Initiative* is to accelerate the globalization of research and to help plant new seeds for medical innovation by nurturing promising young scientists. Feedback from our partners (AMED), the mentors, and the ECIs, has been that the workshops are a truly beneficial experience for all. In addition, ECI feedback in the post-event surveys was highly positive, and many were enthusiastic about the new connections and partnerships across geographies and disciplines, they were able to forge that they would not have made otherwise.





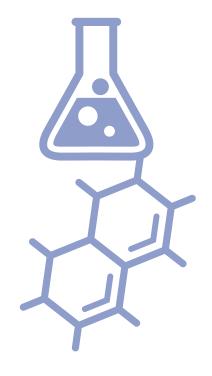
Broadening the STEM Pipeline

The Global STEM Alliance (GSA) is a worldwide talent identification and cultivation network made up of more than 250 partners and reaching participants in over 100 countries. Designed to inspire and prepare the next generation of innovators, GSA programs focus on mentorship from professional scientists and engineers, skills development, and the application of skills to real-world challenges. The GSA is committed to building a global network of 1,000,000 students in 100 countries by 2030.

In 2018 we reached more than **6,000 students**, scientists-in-training, educators, and STEM professionals around the globe, providing more than **275,000 hours** of innovative science, technology, engineering, and math (STEM) programming.

NOTABLE ACHIEVEMENTS INCLUDED:

- With generous support from United Technologies Corporation, we continued
 to roll out the ambitious STEM U initiative, providing one-to-one mentoring to
 hundreds of teens around the world; engaging more than 1,000 students to
 design novel approaches to air travel during the United Technologies Aerospace
 Challenge; and providing free learning resources to thousands of students and
 teachers through our online portal.
- The 1000 Girls, 1000 Futures program welcomed a fourth cohort of participants—surpassing its namesake goal—to benefit from this transformative program designed to keep young women engaged in STEM.
- After receiving a record 6,500 applications, 500 of the world's most exceptional teens were selected to join the fourth cohort of the **Junior Academy**, an elite community of students and STEM professionals dedicated to solving global challenges.
- Using Launchpad, the Academy's proprietary collaboration platform, we ran three innovation challenges for Junior Academy members, as well as open innovation challenges sponsored by Lockheed Martin and Infosys Science Foundation.
- We continued to make STEM accessible and relevant to youth in some of the city's most underserved neighborhoods through our **Afterschool STEM Mentoring** and **Scientist-in-Residence** programs, offered in partnership with the New York City Department of Youth and Community Development and the Department of Education.
- Science Alliance continued to cultivate leadership and communication skills among its graduate students and postdocs to help promote diversity at all stages of the STEM pipeline and prepare these highly talented individuals to enter the workforce.
- In the summer of 2018 we hosted the third annual **"Global STEM Alliance Summit,"** with more than 100 STEM-motivated students from 33 countries convening at the Academy's headquarters to engage in skill-building workshops, network with corporate leaders, and join the ranks of the World's Smartest Network® by becoming the next generation of Academy Members.





Publications

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES

The Academy's 195-year old multidisciplinary science journal is an international science journal published bi-monthly as themed special issues in many areas of science, though predominantly the biological sciences. Each of the twenty-four annual issues presents Original Research Articles and/or commissioned Review, Commentary, and Perspective Articles. Ann NY Acad Sci is available by subscription and Open Access in over 80 countries, is rigorously peer-reviewed, and is ranked among the top multidisciplinary journals worldwide. In 2018, the latest rankings by Clarivate Analytics listed Ann NY Acad Sci 1,211 of 12,271 journals across 234 disciplines worldwide.

Ann NY Acad Sci had +1.9M unique visitors, +1.65M full-text downloads, and 46,385 citations in 2018. 7,631 institutions offered access to the latest Ann NY Acad Sci content via subscription. In addition, philanthropic initiatives extended low-cost or free access to 7,911 developing-world institutions. Total top-line revenue was \$3.21M; net income was \$1.8M.

ACADEMY AND JOHN WILEY & SONS BOOK SERIES

The Academy and John Wiley & Sons joint book series covers topics in all areas of life and physical sciences. Books include professional/research books, educational textbooks, techniques book, and handbooks. Four titles have been published thus far; others are in progress.

Neurobiological Basis of Migraine

August 2017 (ISBN: 978-1-118-96719)

Building Brains: An Introduction to Neural Development, 2nd Edition

November 2017 (ISBN: 978-1-119-29371-2)

Evidence-Based Evolutionary Medicine

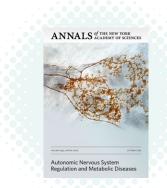
August 2018 (ISBN: 978-1-118-83833-4)

Postharvest Biology and Nanotechnology

January 2019 (ISBN: 978-1-119-28944-9)

Forthcoming:

- Glial Cell Biology
- Vitamin and Mineral Bio-fortification of Edible Plants
- Handbook of Water Harvesting and Conservation
- Developments in Modern Environmental Biotechnology
- Parasitology: An Integrated Approach, 2nd Edition

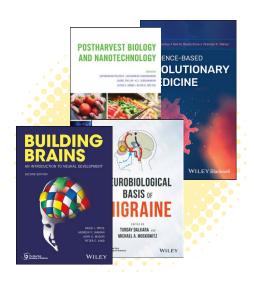


RANKED 14TH OF 69

MULTIDISCIPLINARY JOURNALS WORLDWIDE

4.295 IMPACT FACTOR

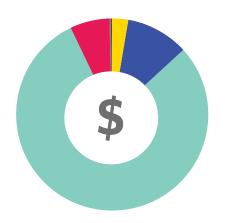
Journal Citation Reports[®] Science Edition (Clarivate Analytics, 2018)



Financial Statement

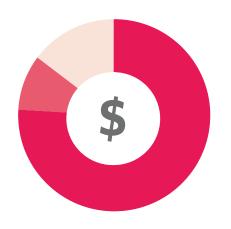
OPERATING SUPPORT AND REVENUE

	Total Public Support And Revenue	\$23,527,177
\circ	Other Income	\$14,492
	Interest And Dividends	\$70,386
•	Registration And Meetings Fees	\$1,567,514
•	Grants And Contributions	\$18,753,145
•	Publication Sales And Advertising	\$2,497,806
•	Membership Fees	\$623,834



OPERATING EXPENSES

	Total Operating Expenses	\$27,141,136
	General And Administrative	\$3,987,367
	Fundraising	\$2,537,655
•	Program Expenses	\$20,616,114



Change In Net Assets Before Depreciation	(\$3,613,959)
Less: Depreciation Expense	\$1,632,204
Change In Net Assets After Depreciation And Before Realized And Unrealized Gains On Investments	(\$5,246,163)
Realized And Unrealized Gains On Investments	\$89,202
Change In Net Assets	(\$5,156,961)



The above data has been condensed from the consolidated financial statements as of June 30, 2019, audited by EisnerAmper, LLP. Copies of the audited statements including the accountant's unmodified opinion are available from the Academy upon request.

Conferences, Discussion Groups, and Scientific Events

The Academy used the power of livestreaming and archived video on demand to put our ideas and events in front of audiences around the world. This year, more than 1,600 people watched an Academy event via Webinar and to date there have been over 8,000 views of the 23 Livestreams published during the year.



LIVESTREAMS



WEBINARS

July 16-17, 2018 **Blavatnik Science Symposium**

July 25-27, 2018

Third Annual Global

STEM Alliance Summit

August 6-10, 2018 **Explore New York STEM Program**

August 13-17, 2018

Computer Science
and Urban Farming

August 20-24, 2018 **Design and Innovation STEM Program**

August 28, 2018

STEM Exchange: Research and Career Symposium

September 12, 2018

Cancer Immunotherapy: The 2018 Dr. Paul Janssen Award Symposium

September 20, 2018

A History of Embryos and Gene Editing in the Public Eye

September 24, 2018

The Inner Lives of Passively Suicidal Americans: Why Racism Isn't Just Bad for Black People September 25, 2018

Neuro-Immunology: The
Impact of Immune Function

on Alzheimer's Disease

September 27, 2018

200th Annual Meeting of the
New York Academy of Sciences

Minimizing the Risk of
Antimicrobial Resistance
from Food Animal Production

October 1, 2018

Genome Integrity Discussion Group October 2018 Meeting

October 1, 2018

Lyceum Society October 2018 Meeting

October 9, 2018

Advances in the Neurobiology of Mental Illness

October 10, 2018

The Mystery of Our Mathematical Universe

October 11-14, 2018

Science Alliance Leadership Training (SALT) 2018, Washington

October 23, 2018

New Therapeutic Strategies to

Combat Antibacterial Resistance

October 24-25, 2018

Healthcare in the Era of Big Data: Opportunities and Challenges

October 29, 2018

Sick of Race: How Racism Harms Health and Misleads Medicine

October 30, 2018

Addressing Folate, Thiamine, and Vitamin D Deficiencies Globally

November 2, 2018

Science Denial: Lessons and Solutions

November 5, 2018

Lyceum Society November 2018 Meeting

November 5, 2018

The New York Academy of Sciences Annual Gala

November 13, 2018

Deep Learning to Accelerate Drug Development: An NYC Symposium

November 28, 2018

2019 Blavatnik Regional Awards: Call for Nominations Webinar

December 3, 2018

Genome Integrity Discussion Group December 2018

December 3, 2018

The Right to Remain Silent: Self-Monitoring and the Experience of Inequality During Traffic Stops in the South

December 4, 2018 **Phagocytes in Health and Disease**

December 6, 2018

Human Cognition and the AI Revolution

Get updates about our event Livestreams by visiting *livestream.com/newyorkacademyofsciences* and clicking **"Follow"** on the upper right-hand side of your screen.

December 11, 2018

Alzheimer's Disease Therapeutics: Alternatives to Amyloid

January 7, 2019

Lyceum Society January 2019 Meeting

January 23, 2019

Constraint-Induced Movement Therapy: From Monkey Lab to Human Rehab

January 26-27, 2019

Introductory Coding for Researchers 2019

January 28, 2019

Urban (In)Equality and Materiality: A Global Deep Time Perspective

January 31-February 1, 2019

The Interstellar Initiative Workshop

February 4, 2019

Genome Integrity Discussion Group February 2019

February 4, 2019

Lyceum Society February 2019 Meeting

E February 5, 2019

Using Informational Interviews to Find Your Dream Job 2019

February 7, 2019

Reality Is Not As It Seems

February 11, 2019

Build Your All Star Resume and LinkedIn Profile

February 19, 2019

Extracellular Vesicles in Diagnostics and Therapeutics

E February 20, 2019

Phase Separation in Biology and Disease

February 25, 2019

The Pensioner's Dilemma: Generations, Class, and Inequality in Southern Europe March 4, 2019

Lyceum Society March 2019 Meeting

March 14, 2019

Adult Stem Cells and Regenerative Medicine

March 25, 2019

Where has "Japanese Women's Language" Gone?

April 1, 2019

Genome Integrity Discussion Group April 2019

April 1, 2019

Lyceum Society April 2019 Meeting

April 2, 2019

Antibiotics in Animal Agriculture: What You Need to Know

🖳 April 16, 2019

Microsatellite DNA Expansions in Rare Genetic Diseases

L April 18, 2019

Finding Your Side Hustle: Redefining the PhD

April 25, 2019

Translating Genetics into Medicine

April 26, 2019

Frontiers in Regenerative Medicine: 2019 Innovators in Science Award Symposium

April 26, 2019

Severe Asthma, Inflammation, and Lung Repair

May 6, 2019

Lyceum Society May 2019 Meeting

May 7, 2019

Cultural Awareness Workshop: Navigating Diversity in the Lab

May 8, 2019

Targeting Tumor Heterogeneity

May 9, 2019

Cancer Metabolism and Signaling

May 11-12, 2019

Communicating Science to Policy Makers

May 13, 2019

Complex Medicines: Science, Regulation, and Accelerating Development

May 14-15, 2019

Frontiers in Cancer Immunotherapy

May 20, 2019

Innovative Vaccines against Resistant Infectious Diseases and Emerging Threats

May 22, 2019

Chemical Biology Discussion Group Year-End Symposium 2019

June 3, 2019

Genome Integrity Discussion Group June 2019

June 3, 2019

Lyceum Society June 2019 Meeting

June 3-August 5, 2019

Scientists Teaching Science Online Course

June 4, 2019

2019 Ross Prize in Molecular Medicine — Genomics of Autoinflammatory Diseases

June 11, 2019

Genomics Enters the Clinic: What Should Savvy Consumers Know?

June 18-20, 2019

13th Annual CounterACT Network Research Symposium

Lane 25, 2019

Improving Birth Outcomes: What's Next on Multiple Micronutrient Supplementation

eBriefings

eBriefings are multimedia recaps of Academy meetings designed to help a global audience stay informed about the latest research presented at Academy conferences and events.

Advances in Translational Models to Study Fibrosis

Cancer Metabolism and Signaling

Resolution of Inflammation, Infection, and Tissue Regeneration

The 2018 Blavatnik Science Symposium

Cancer Immunotherapy: The 2018
Dr. Paul Janssen Award Symposium

The Neurobiology of Mental Illness: Advances and Therapeutic Approaches

Neuro-Immunology and Alzheimer's Disease: Exploring Therapeutic Approaches

Antimicrobial Resistance in Food Animal Production: Minimizing the Risk

Big Data and Healthcare: Opportunities and Challenges

Extracellular Vesicles in Health and Disease

Phase Separation and Disease

Climate Science: Decision-Making in a Warmer World

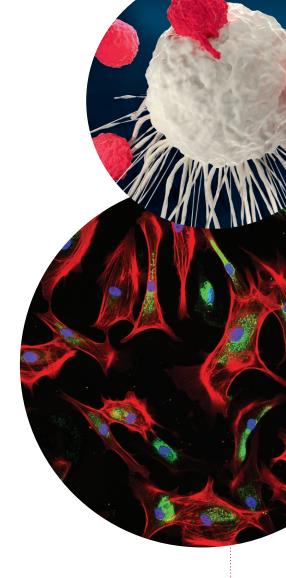
Advances in Adult Stem Cells and Regenerative Medicine

Cure, Create, Innovate: The Future of Research in the UK

Grantsmanship for Graduate Students and Postdocs: Navigating Fellowships

Severe Asthma, Inflammation, and Lung Repair: Exploring Therapeutic Approaches

The New Transformers: Innovators in Regenerative Medicine



PODCASTS

Inform the public about important scientific topics in an easily digestible format; available on the Academy's website and on iTunes.

Deciphering Zika

Discovering New Liver Disease Treatments

Proof of Concept Centers: Changing Weather

Inspiring Stories from the Future of STEM

Rethinking Climate Change

Proof of Concept Centers: Small Materials Solving Big Problems

Reevaluating Clinical Trial Design

Proof of Concept Centers: Tackling Industrial Waste

Working Together for People, Planet, and Prosperity

Annals of the New York Academy of Sciences

June 2018, Volume 1422 Special issue:

The Year in Evolutionary Biology

June 2018, Volume 1421 Special Issue:

Annals Reports

May 2018, Volume 1420 Special Issue:

The Year in Neurology and Psychiatry

May 2018, Volume 1419 Special Issue:

Implementation Research and Practice for Early Childhood Development

April 2018, Volume 1418 Special Issue:

Healthy Aging

April 2018, Volume 1417 Special Issue:

The Year in Immunology

March 2018, Volume 1416 Special Issue:

Adolescent Women's Nutritional Status

March 2018, Volume 1415 Special Issue:

MARROW

February 2018, Volume 1414 Special Issue:

Folate Status in Women and Neural Tube Defect Risk Reduction

February 2018, Volume 1413 Special Issue:

Myasthenia Gravis and Related Disorders II

January 2018, Volume 1412 Special Issue:

Myasthenia Gravis and Related Disorders I

January 2018, Volume 1411 Special Issue:

The Year in Diabetes and Obesity

December 2017, Volume 1410 Special Issue:

Musculoskeletal Repair and Regeneration II

December 2017, Volume 1409 Special Issue:

Musculoskeletal Repair and Regeneration I

November 2017, Volume 1408 Special Issue:

Annals Reports

November 2017, Volume 1407 Special Issue:

Equivalence of Complex Drug Products: Scientific and Regulatory Challenges

October 2017, Volume 1406 Special Issue:

Unlocking the Unconscious: Exploring the Undiscovered Self

October 2017, Volume 1405 Special Issue:

Tight Junctions and their Proteins II

September 2017, Volume 1404 Special Issue:

Annals Reports

September 2017, Volume 1403 Special Issue:

Resveratrol and Health

August 2017, Volume 1402 Special Issue:

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August 2017, Volume 1401 Special Issue:

Phytochemicals in Medicine and Food II

July 2017, Volume 1400 Special Issue:

Annals Reports

July 2017, Volume 1399 Special Issue:

The Year in Ecology and Conservation Biology



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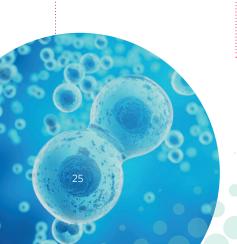
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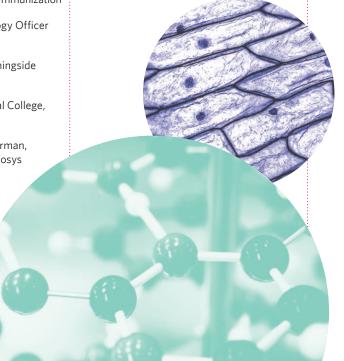
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