In the Face of Global Challenges, Science Leads the Way

In spring 2020, not long after the COVID-19 lockdown began, I assumed my new role as President and CEO of the New York Academy of Sciences. I was thrilled to join the Academy, but I will confess that it has been an interesting challenge to take on this role under these circumstances.

Like everyone else it was necessary for the Academy to adapt to the changing times, so our teams promptly pivoted to a schedule of entirely digital conferences. We launched a robust portfolio of pandemic-related programs providing the most up-to-date information as well as discussions about the impact of the most pressing issues on all sectors of society.

My vision for the Academy is to leverage the strength of its extraordinary network to launch dynamic new programs that will reinforce the role of science in every facet of our lives. Already our team is working on reigniting science-based policy-making to address real-world issues; planning a professional fellows’ program to leverage the great minds and talents in our networks; establishing new scientific prizes and research support to extend our global impact; expanding our role in public outreach and the publication of scientific discoveries and perspectives, as well as delivering more real-time opportunities for underserved populations to acquire crucial STEM (and STEM related) skills required in today’s evolving job market.

The New York Academy of Sciences has been, and always will be, a leader in identifying emerging issues and bringing together those who will provide the solutions. I am honored to be part of this dynamic network of “scientists without borders” committed to science for the public good—a mission that the Academy pledges to pursue with vigor and resolve in the years ahead.

Thank you for being part of our global community. I invite you to continue with us on our journey, as we explore the vast potential of our highly respected scientific organization.

Watch a short video at: nyas.org/about/our-mission

Nicholas Dirks,
President and CEO,
New York Academy
of Sciences
In November 2019, more than 300 guests attended the New York Academy of Sciences Gala celebration of the Blavatnik Regional Awards for Young Scientists, as well as to pay tribute to retiring Academy President and CEO, Ellis Rubinstein.

1. Ellis Rubinstein, President Emeritus, New York Academy of Sciences reflects on the achievements during his tenure.
2. Sheryl Chamberlain, VP Strategic Alliances at Medidata and Paolo Gaudiano, co-Founder and Chief Scientist, Aleria and NYU Stern Adjunct Professor.
4. Larry Silverstein, President and CEO of Silverstein Properties, talks about the New York Academy of Sciences as an early tenant at 7 World Trade Center.
5. Representatives from Academy sponsor PepsiCo (Martin Finn, Susan Hamel, Heidi Bialk, Louise Lammers, Renee Lammers) enjoyed the opportunity to network at the Gala.
6. Representatives from longtime Academy partner Pfizer (Benedikt Bosbach and Mariano Oppikofer).
1. Peter Thorén, Executive Vice President, Access Industries, with MaryEllen Elia, Former Senior Fellow, International Center for Leadership in Education (ICLE), a division of learning company Houghton Mifflin Harcourt, and David Mordecai, Co-Managing Member, Numerati Partners, LLC.
Pandemic Research, Lockdowns, and the Transition to a "New Normal"

The New York Academy of Sciences has always been on the cutting-edge of providing the latest data and information about emerging issues in science, so tapping into the collective talents of our program team members and global network of contacts to develop a portfolio of programs about COVID-19 within days, was the Academy fulfilling its mission of science for the public good.

While livestreaming and webcasting programs is not new for Academy events, we promptly stepped up the reformatting of all the programs away from in-person events even before the lockdown went into effect, thus ensuring a safe forum for scientists to convene and exchange crucial knowledge among their colleagues across all disciplines. As a result, during the 16 week period from March through June 2020, the Academy was able to develop and host more than a dozen educational convenings dedicated to awareness and understanding of COVID-19 infection, treatment, economic impact, and vaccines, and attended by more than 15,000 researchers, healthcare workers, and the general public worldwide.
Convening for Impact: Programming Highlights

Our 2019–2020 programming season reflected an incredible year of engagement and expansion, with more than 26,000 global investigators and science enthusiasts from 80 countries convening virtually and in person at 132 meetings—a doubling of our audience and 25% growth of our event portfolio compared to the prior year. Diversity, equity, and inclusion initiatives saw the percentage of female speakers increase to 45%.

Groundbreaking new discoveries across topics as diverse as materials science, energy storage, synthetic chemistry, artificial intelligence, human space travel, cancer, vaccine development, autoimmune and cardiovascular disease captured the frontiers of science today. Professional development workshops for the next generation of scientists and engineers focused on networking, personal branding, career planning, transferable skills, and grantsmanship.
Convening For Impact: Rallying to the Fight Against Covid-19

Building on the Academy’s long history of convening experts to address global health crises, in February 2020 the Academy began to mobilize our network around the question triggering fear and confusion across the globe: “What do people need to know about the new coronavirus?”

Within days, the Academy’s first free educational webinar on COVID-19—drawing almost 10,000 viewers—cut through the fiction with accessible, science-based facts.

In the ensuing four months, determined to counter misinformation and conflicting messages from civic leaders in the face of the rapid evolution of COVID-19 science, we galvanized a global network of 50 volunteer virologists, epidemiologists, drug developers, and policy makers to present 13 educational programs that served as a crucial clearinghouse of accurate, verified data and analysis about the coronavirus. These briefings—drawing 51,000+ viewers—explained virus transmission and the need to ‘flatten the curve’; assuaged concerns over food security and safety as we sheltered in place; advised reporters on best practices for verifying the science at the heart of their scoops; defined testing options; provided evidence-based guidance on safe re-opening of New York’s schools and businesses; and closely tracked the clinical testing and roll out of vaccine and therapeutic candidates. Frontline actors—including Moderna’s Chief Medical Officer Tal Zaks, M.D. and Pfizer’s Head of Vaccine R&D, Kathrin Jansen, Ph.D.—shared breaking data on their companies’ vaccine development efforts in conversation with CNBC’s senior health & science reporter, Meg Tirrell.
Convening For Impact: The Road to Collaborative Intelligence

Directly building on the success of the Academy’s annual *Machine Learning Symposium*, the longest-running conference on this critical field of Artificial Intelligence (AI) in the Eastern United States, in November 2019 the Academy convened our first *Natural Language, Dialog and Speech Symposium* to explore cutting-edge methodologies and computational approaches to applied and theoretical problems in dialog systems, spoken and natural language understanding, natural language generation, and speech synthesis. Taken together, these AI disciplines underpin many of the applications of AI we encounter in our daily lives, from search engines to smart devices to online bots.

Three high-level virtual roundtables with AI experts from academia, business, and government further explored the meaningful role the Academy could play to support AI research and the ethical deployment of the technology for the common good. The resultant Report, titled *Collaborative Intelligence*, identified opportunities at the intersection with education, collaborative research and development, and policy/advocacy, which will inform the Academy’s future AI strategy.
The panel *What Happens When We Die?*, presented in collaboration with the Critical Care and Resuscitation Research Program at NYU Langone Health, tapped into society’s curiosity with what is perhaps the greatest unanswered question about the human experience.

Drawing more than 100,000 viewers since its first airing in the fall of 2019, the panel explored the latest scientific understanding of what happens in our bodies after the heart stops. The conversation upended conventional notions about the nature of brain injury, consciousness, and death itself. Provocative, surprising, and challenging, these avenues of research carry significant implications for organ donation programs, end-of-life decision-making, and understanding the nature of human consciousness.
The 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 5,400 scientists and engineers nominated by over 500 institutions to the categories of Life Sciences, Physical Sciences and Engineering, and Chemistry. By the close of FY2020, the Blavatnik Awards for Young Scientists will have awarded $11 million, honoring 330 young scientists from more than 47 countries, representing over 36 scientific disciplines.

REAL IMPACTS
In the face of the COVID-19 pandemic, many former recipients of the Blavatnik Awards for Young Scientists are rising to the challenge as society calls on scientists to help tackle this virus, from predicting and detecting pandemic disease spread to identifying effective treatments and researching new vaccine technologies.
The 2019 Blavatnik National Awards Ceremony was held on September 23, 2019 at the American Museum of Natural History to honor 31 National Finalists and three National Laureates—Emily Balskus (Harvard University), Heather J. Lynch (Stony Brook University), and Ana Maria Rey (University of Colorado Boulder)—marking the first time in Blavatnik Awards history that three female scientists were recognized as Blavatnik National Awards Laureates. Martha E. Pollack, President of Cornell University, served as Master of Ceremonies. The Laureates were each presented with medals and US$250,000 in unrestricted funds. The 2019 National honorees have made breakthroughs in understanding the inner-workings of the microbiome, cells, DNA, RNA, and viruses to better protect humans from disease; developing new tools to track ecological changes for improving agricultural performance and protecting species from extinction; and using novel chemical imaging and synthesis techniques to create new materials that can be used in robotics, medical sensing, and sustainably-sourced electronics.

The 31 Finalists of the 2020 Blavatnik National Awards were announced on June 17, 2020, and the three 2020 National Laureates—William R. Dichtel (Northwestern University), Clifford Brangwynne (Princeton University), and Brian Metzger (Columbia University)—were announced on July 22, 2020. The 2020 National honorees have made cutting-edge discoveries that include designing sustainable building materials, next generation electronics, and novel 2D and 3D polymers for water purification and energy storage; developing new methods for sustainable chemical reactions; and harnessing biology to fight antibiotic resistance and create artificial muscles. They will be celebrated, alongside the 2021 Laureates, at a combined ceremony in New York City in September 2021.

PICTURED AT LEFT: (Top) The 2019 Blavatnik National Awards Laureates with Len Blavatnik (left). (Bottom) Blavatnik National Awards ceremony, at the American Museum of Natural History in New York City.
The Blavatnik Awards in the United Kingdom

The 2020 Blavatnik Awards in the United Kingdom invited institutions from across England, Scotland, Wales, and Northern Ireland to nominate their most promising young scientists. Despite being still in the early stages of their careers, the nine 2020 Blavatnik Awards in the UK honorees—three Laureates and six Finalists—are already changing science and our understanding of the world. The UK honorees have made innovative discoveries ranging from microbubble engineering and clean energy development to the discovery of new planets and advances in medicine, physics, and fossil dating.

The three Laureates—Timothy Behrens (University of Oxford and University College London), Kirsty Penkman (University of York), and Claudia de Rham (Imperial College London)—each received US$100,000 in unrestricted funds and each of the six Finalists received US$30,000 in unrestricted funds. The UK honorees were celebrated at the 2020 Blavatnik Awards UK Ceremony held in London on March 4, 2020, with Nobel Laureate Sir Paul Nurse, Chief Executive and Director of the Francis Crick Institute, serving as Master of Ceremonies.

PICTURED AT LEFT: (Top) 2020 Blavatnik Awards in the UK honorees. (Bottom) Claudia de Rham, 2020 Blavatnik Awards in the UK Physical Sciences & Engineering Laureate.
The New York Academy of Sciences, in collaboration with the Israel Academy of Sciences and Humanities, administers the Blavatnik Awards in Israel. The three nominees selected as the 2020 Blavatnik Awards in Israel Laureates, Guy Rothblum (Weizmann Institute of Science), Emmanuel Levy (Weizmann Institute of Science), and Igor Ulitsky (Weizmann Institute of Science), have each pioneered new research directions in their respective fields. The Laureates were recognized for developing algorithms that protect privacy in “big data” and verify the correctness of cloud computations, characterizing the coordinated dance of millions of proteins as they support life, and understanding the activity of long noncoding RNA as potential therapeutic agents for cancer, brain injury, or epilepsy. Each Laureate was awarded US$100,000 in unrestricted funds and they will be celebrated, alongside the 2021 Laureates, at a combined ceremony in Jerusalem in August 2021.

PICTURED AT LEFT: (Top) Nili Cohen, President, Israel Academy of Sciences and Humanities; (Bottom) 2020 Blavatnik Awards in Israel Laureates.

The Blavatnik Awards in Israel
The 2019 Blavatnik Regional Awards received nominations of talented postdoctoral scientists from institutions across New York, New Jersey, and Connecticut. Three Winners, Laura Duvall (The Rockefeller University, now at Columbia University), Juntao Ye (Cornell University, now at Shanghai Jiao Tong University), and Netta Engelhardt (Princeton University, now at Massachusetts Institute of Technology), 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 11, 2019.

The research of the 2019 Blavatnik Regional honorees addresses critical global challenges—from understanding our universe to protecting our planet—and sets them all on paths to promising scientific careers. These young scientists have made key discoveries in understanding quantum gravity, developing drug synthesis methods that are more efficient and produce less waste, controlling the spread of mosquito-borne diseases, and more.

PICTURED AT LEFT: (Top) The 2019 Blavatnik Regional Awards honorees at the Academy’s 2019 Gala, with Academy CSO Brooke Grindlinger (left) and Peter Thorén of the Blavatnik Family Foundation (right); (Bottom) 2019 Blavatnik Regional Awards Life Sciences Winner, Laura Duvall.
Blavatnik Scholars Share Cutting-Edge Science

There are few communities of scientists as central to the future of science as the Blavatnik Scholars. To support this community of elite young scientists, the Academy hosted the sixth annual Blavatnik Science Symposium on July 15 and 16, 2019 in New York City. Nearly 100 new and previous honorees, distinguished scientists, academic luminaries, business entrepreneurs, and industry professionals from diverse disciplines participated in the two-day event to expand their scientific network and foster new interdisciplinary collaborations. Presentations and discussions at the symposium unified scientists working to address some of the most pressing contemporary challenges: from building a sustainable future and protecting biodiversity from climate change to discovering new methods for diagnosing and treating disease.

Science cannot function in isolation; scientists rely on communication and interaction with the public to make their discoveries have real impact. On March 5, 2020, the Laureates and Finalists of the 2020 Blavatnik Awards for Young Scientists in the UK shared their cutting-edge research with the public at an open symposium in London. The event provided science enthusiasts of all ages an opportunity to see science up-close, providing inspiration and role models for the next generation of scientists. Victoria Gill of BBC News hosted the event, which included a closing panel discussion where honorees discussed the future of scientific research in the UK.
Innovators in Science Award

The Academy, in partnership with Takeda Pharmaceuticals, completed the third cycle of the Innovators in Science Award, a global award recognizing a promising Early-Career Scientist’s and an outstanding Senior Scientist’s contributions to biomedical science. The **2020 Innovators in Science Award** recognized scientists from around the globe for their exceptional research in **Rare Diseases**.

The Winners were selected from a pool of 123 nominations from across five continents, representing diverse research fields, and included a diversity of research fields, from congenital and genetic diseases to rare cancers and metabolic disorders. The Early-Career Scientist Winner, Jeong Ho Lee (pictured at left, bottom), was recognized for his research investigating genetic mutations in stem cells in the brain that result in rare developmental brain disorders. Adrian Krainer (pictured at left, top), the Senior Scientist Winner, was recognized for his outstanding research on splicing defects in patients with spinal muscular atrophy (SMA). His discovery has resulted in a near full recovery of function in pediatric SMA patients such as Emma Larson (pictured at left, middle).

Each Winner received a US$200,000 prize to support their commitment to innovative research. The Award Winners’ accomplishments were recognized at the Academy’s first virtual awards ceremony and scientific symposium held on October 1 and 2, 2020.

"With more than 300 million patients suffering from a rare disease worldwide, the patient burden is staggering, yet 95% of rare diseases still lack an approved treatment. Takeda is committed to supporting the advancement of science related to rare diseases through our partnership with the Academy and our own R&D endeavors."

Christophe Weber
President and CEO, Takeda Pharmaceuticals
The New York Academy of Sciences Nutrition Program

The New York Academy of Sciences’ Nutrition Program continued to be a leading authority on food safety, food security, and micronutrient deficiencies in 2020.

The team hosted the first meeting of the Global Thiamine Alliance in Luang Prabang, Laos, to support nutrition interventions in a region of the world that sees significant infant mortality from thiamine deficiency. They contributed to the Academy’s COVID webinar series with two webinars on Food Security in the Pandemic and Food Safety in the Pandemic.

The team also continued its role as the secretariat for the Multiple Micronutrient Supplementation in Pregnancy Technical Advisory Group and the Nutrition Modeling Consortium.
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 foster international and interdisciplinary collaboration between scientists early in their careers. The initiative brings together researchers from around the world, selected via a competitive application process, and teams them with their peers in complementary 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.

The 2019-2020 Interstellar Initiative focused on challenges in Healthy Longevity. Teams of early career researchers and mentors met over a series of two workshops that convened at the Academy, where they developed innovative research projects. Modest funding was provided by AMED to each team. In 2020, teams were awarded additional funding through a partnership between AMED and the National Academy of Medicine, through the Healthy Longevity Grand Challenge Catalyst Phase.

In a recent survey of prior participants, 64% of respondents reported they continue to collaborate with teammates assigned to them through the Interstellar Initiative since its inception in 2017, 66% have already applied for additional outside funding, and 28% of these funding applicants were successful. Just as importantly, participants say the process of developing new research ideas with individuals who are dissimilar to themselves—whether the differences are in academic background, culture, or language—was an invaluable experience in shaping how they conduct their work today.
Global STEM Alliance

The Global STEM Alliance equips students with the skills and role models needed to prepare them for life and work, through:

**Personal Narratives**
We mine our membership of 20K+ worldwide to surface stories that resonate with young people and celebrate the achievements of diverse STEM professionals.

**Mentorship**
We provide opportunities for students to engage with and learn from STEM professionals in meaningful ways.

**Real-world Learning**
We engage students in solving real problems, addressing issues they care about, and collaborating in ways that reflect the world of work.
In FY2020 the GSA:

- Reached 18,100 students and 550 mentors with 450,000 hours of programming.
- Welcomed 1,095 students from 75 countries to the Junior Academy, an elite group of problem solvers, bringing the total number of students to 4,150 from 103 countries!
- Recruited 1,031 students from 78 countries to join the 1000 Girls, 1000 Futures community dedicated to supporting young women in their pursuit of STEM.
- Ran three open innovation challenges, engaging 3,000+ young people in addressing global issues while building essential skills.
- Engaged 60 STEM professionals to mentor 3,000+ students in classrooms and after-school programs in disadvantaged communities in and around New York City. Despite the pandemic, we successfully conducted these programs—which are typically in person—online.
- Trained 144 K–12 educators in best practices through a new online course, STEM Education in the 21st Century.
The Academy’s 197-year old Annals of the New York Academy of Sciences (Ann. N.Y. Acad. Sci.) is an international multi-disciplinary 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/or Perspective Articles.

Ann. N.Y. Acad. Sci., a hybrid journal, 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 2019, Clarivate Analytics listed Ann. N.Y. Acad. Sci. 1,317 of 12,856 journals across 234 disciplines worldwide.

Ann. N.Y. Acad. Sci. had +1.9M unique visitors, +1.65M full-text downloads, and 46,385 citations in 2019. 8,896 institutions offered access to the latest Ann. N.Y. Acad. Sci. content via subscription. In addition, philanthropic initiatives extended low-cost or free access to an additional 9,698 developing-world institutions. Total top-line revenue was $3.16M; net income was $1.7M.
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. Six titles have been published thus far; others are in progress:


*Evidence-Based Evolutionary Medicine* August 2018 (ISBN: 978-1-118-83833-4)


FORTHCOMING:

- *Glial Cell Biology*
- *Developments in Modern Environmental Biotechnology*
- *Parasitology: An Integrated Approach, 2nd Edition*
### OPERATING SUPPORT AND REVENUE
- Membership Fees: $615,342
- Publication Sales And Advertising: $2,361,958
- Grants And Contributions: $14,547,319
- Registration And Meetings Fees: $1,118,799
- Interest And Dividends: $12,682
- Other Income: $45,674

**Total Public Support And Revenue** $18,701,774

### OPERATING EXPENSES
- Program Expenses: $15,625,823
- Fundraising: $2,105,132
- General And Administrative: $3,780,671

**Total Operating Expenses** $21,511,626

### Change In Net Assets
- Before Depreciation: $2,809,852
- Less: Depreciation Expense: $1,548,000
- Change In Net Assets After Depreciation And Before Realized And Unrealized Gains On Investments: $4,357,852
- Realized And Unrealized Gains On Investments: $129,283
- Change In Net Assets: $4,228,569

*The above data has been condensed from the consolidated financial statements as of June 30, 2020, audited by EisnerAmper, LLP. Copies of the audited statements including the accountant’s unmodified opinion are available from the Academy upon request.*
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The New York Academy of Sciences is pleased to acknowledge the generous contributions of all our donors. Their support helps us address global challenges through science-based solutions.

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