HIGHLIGHTS FROM THE
7th INTERNATIONAL SYMPOSIUM
GLOBAL CHALLENGES FOR TODAY’S RESEARCH UNIVERSITIES:
HEALTH, ENERGY AND ENVIRONMENT, AND AGRICULTURE

OCTOBER 11–14, 2018 | BEIJING, CHINA
Founded in 2005 at Washington University in St. Louis, the McDonnell International Scholars Academy seeks to prepare the next generation of global leaders and to foster collaboration among a network of 35 leading research universities. Together, we seek to tackle some of the most profound global challenges that no single country, let alone university, can address on its own.

With this in mind, in October 2018, Washington University in St. Louis organized the 7th International Symposium of the McDonnell Academy in Beijing, in collaboration with one of its longstanding partners in China, Tsinghua University. The Symposium convened presidents, faculty and graduate students from the Academy’s partner institutions to discuss new approaches to research and education in three thematic areas:

- Agriculture, food and water
- Energy and environment
- Public health and aging

The meeting created space for joint investigation on complex global issues, drawing on a diversity of perspectives from multiple countries and disciplines. It offered a unique opportunity to engage and connect with leading scholars and experts from around the world.

In terms of relationship-building and student mentorship, the event’s value cannot be overstated. “The symposium is a leadership-building opportunity for our Scholars,” said James Wertsch, founding director of the McDonnell Academy. “They have had a chance to meet with university leaders, they’ve been able to network. We are preparing them to be global leaders across disciplines who will be able to address these big issues effectively well into the future.”

During the executive workshop sessions, presidents and representatives of partner universities explored ways to collaboratively address important challenges and shared best practices from each institution. A key outcome of this dialogue was a joint University Campus Sustainability Declaration, committing the 21 signatories to working collaboratively to exchange ideas, identify approaches and metrics, and implement measures that help reduce their carbon footprint. By using the campus as a “living laboratory,” they hope to further strengthen research and educational programs in energy, environment and sustainability.

**VALUE & IMPACT**
- Joint investigation of key global issues
- Relationship-building & student mentorship
- Sharing of knowledge on best practices

**OVERVIEW**

premier universities

400+ attendance
50+ expert panelists
250 workshop participants

100+ media placements
100+ million audience reach

16 presidents
Can and should the business of universities be expanded to serve all ages?

This was the question that university presidents and faculty explored during the first executive session on Oct. 11. The discussion was facilitated by Professor Nancy Morrow-Howell, director of the Harvey A. Friedman Center for Aging at the Institute for Public Health. Morrow-Howell observed that two forces are shifting demographics in our countries and providing opportunities for change in our social and educational institutions: more of us are living longer than ever before and we are having fewer children. Currently, our educational institutions remain largely age segregated in regard to students — focused on the first quarter or a third of a person’s life. In the face of new demographics, universities are out of step with the current realities of longer lives. She argued that if we are living into our eighties and nineties and working longer into the extended life course, we need access to education opportunities in mid-life and beyond.

Morrow-Howell presented a set of principles developed by an Age-Friendly University initiative launched in 2012. Washington University recently joined the Age-Friendly University Global Network as a member and under the direction of Morrow-Howell, the Harvey A. Friedman Center for Aging has facilitated an advisory group to determine how the concept and principles fit within the university’s current environment. The work at Washington University aims to create opportunities for students, faculty, staff, and alumni to engage in education throughout the life course, build skills among faculty, staff, and students to work in multigenerational environments; establish programs that facilitate transitions between jobs and careers and into retirement; and produce knowledge on multigenerational education, age stereotypes in academia, and educational pathways for longer life course.

Prior to the symposium, Morrow-Howell sought input from faculty and staff at McDonnell Academy partner institutions to understand where to start the conversation about how we could collaborate together on transforming our universities to better serve people of all ages. The survey showed strong agreement on the importance of students learning to work in multi-generational settings and the need for more support for older students, as well as faculty and staff transitioning in career or to retirement.

Can we collectively discuss best practices related to campus sustainability? Can we use the university campus as a “living laboratory” to promote research and education on energy, environment and sustainability?

In the second executive workshop session, Mark S. Wrighton, chancellor, Washington University in St. Louis; and Pratim Biswas, chair of the Department of Energy, Environmental & Chemical Engineering at Washington University in St. Louis, urged university leaders to consider these questions. Wrighton noted, for example, that focused on the Washington University has been able to double its annual carbon footprint while using the same amount of energy as it did in 1995. The institution’s longstanding commitment to research in this space is also evident in the development of the McDonnell Academy Global Energy and Environment Partnership (MAGEEP), a consortium of more than two dozen universities and corporate partners, who are working together to advance research in energy, environment and sustainability.

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Bin Yang, vice president and provost, Tsinghua University, shared his conviction that actions speak louder than words and noted the importance of demonstrating a clear commitment to the idea of a green campus and embracing a philosophy of green education. This is reflected, for example, in the fact that Tsinghua University offers more than two hundred courses related to sustainable development, and its campus is a key ecological node in northeast Beijing.

Peter Hej, president, The University of Queensland, explained that due to the high cost of electricity in Australia, investing in solar energy makes economic sense. Given that most of the electric use is for air conditioning, the University of Queensland’s innovation in this space includes storing energy as cold water, in the form of a 3 million liter chilled water storage tank, which enables the university to use the surplus energy produced during daylight hours to store cooling energy for use overnight.

Bundhit Eua-arporn, president, Chulalongkorn University, shared that his institution has a committee focusing on sustainable development, with energy being one of five key areas the committee is seeking to promote. It also produces an annual report tracking key metrics to check progress and has introduced policies such as not allowing plastic bags in university stores.

Mustafa Kōk, president, Middle East Technical University, said bike rentals, cross-campus buses and a roof garden with solar panels are among the solutions currently explored at his university.

Shalini Bharat, director, Tata Institute of Social Sciences, noted that India is starting to see the effects of aging, although its population is still very young. However, in the next two decades, she expects this issue to pose a financial challenge due to the cost of retirement benefits. She sees opportunities to respond to this challenge through active reemployment policy, new roles for retired faculty, promoting the concept of a “longevity dividend,” and addressing issues of financial security. Her university has established a Center for Lifelong Learning, which promotes the philosophy of continuing education.

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Marcelo Knobel, rector, State University of Campinas, shared that when he first thought about this topic, he was not thinking about students but about faculty. In Brazil, when professors retire, they still receive a full salary. As much as 33 percent of the institution’s budget goes to retired faculty, which is a considerable problem for a public university. One of the key challenges is how to encourage faculty to remain at the university longer instead of retiring. Knobel believes that the way to do that is to improve the quality of life on campus. He is also seeking to create a culture of volunteering, calling on volunteers to teach people of fifty years and older.

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Dr. John Holdren delivered the opening keynote at the Symposium on Oct. 12.

OPENING KEYNOTE BY JOHN HOLDREN

John Holdren, science advisor to President Obama, professor at Harvard University and Tsinghua Distinguished Visiting Professor, delivered the opening keynote address on “The energy-climate challenge and sustainable well-being.”

In Holdren’s words, “human wellbeing sits on a stool with three legs”: economic and technological conditions, sociopolitical factors and environmental conditions and processes. He suggested that development should mean improving all three of these dimensions, while sustainable development should mean “doing so by means and to end points that are consistent with maintaining the improved conditions indefinitely.” Climate governs the trajectory of that development as it affects the environmental conditions and processes. The essence of the energy-climate challenge is that “The world has long been getting most of the energy its economies need in ways that are now seriously disrupting the climate its environment needs,” said Holdren.

The opening keynote painted a bleak and alarming picture of climate change, which is already causing growing harm around the globe. The evidence is clear: rising CO₂ emissions and concentrations, warmer average temperatures, increasing pace of sea level rise, shrinking of the Greenland and Antarctic ice sheets. These changes are already causing serious harm. Numerous all-time temperature records have been set in the last two years; the world is experiencing more floods and droughts, heat waves and wildfires; and hurricanes and typhoons are strengthening. Absent big emissions reductions, all of these phenomena will get worse.

Holdren suggested three options for action: mitigation to reduce the pace and magnitude of the changes in climate caused by human activities, adaptation to reduce the adverse impacts on human wellbeing resulting from the changes that do occur, or suffering the adverse impacts and societal disruption if we fail at mitigation or adaptation. “What is at stake today in the choices we make is the future mix of mitigation, adaptation and suffering,” said Holdren. To minimize the amount of suffering in that mix, we will need both mitigation and adaptation. Holdren emphasized that many of the adaptation measures one might take would be helpful even in a stable climate, but climate change is increasing the need for them. In considering how much mitigation is necessary, he argued we are currently far from being on track to meet the goal of the United Nations Framework Convention on Climate Change (UNFCCC) of keeping the global average temperature to below 2°C above pre-industrial levels. In Holdren’s view, the Paris Agreement is far from providing assurance of staying below 2°C and should be regarded “only as a first step.” Even increased ambition gives “about a 30 percent chance” of staying below 2°C. Meeting this goal looks very difficult, yet this would far from a safe increase. Holdren regards the recently released report of the Intergovernmental Panel on Climate Change (IPCC) as a “wake up call for the complacent,” which “calls into serious question whether sustainable prosperity can be achieved in a 2°C world.” Even 1.5°C will entail much bigger damages than today.

Holdren concluded that climate challenge is a “complex, existential threat to sustainable wellbeing,” and research universities have an important role to play in addressing such complex global challenges. His recommendations for research universities included: making room for interdisciplinary and policy-relevant research, providing PhD students and postdocs with an introduction to translating discovery into application, partnering with business to leverage resources, supporting faculty forays into positions in government, organizing workshops and seminars for public officials, conducting public outreach to strengthen science and technology literacy, and strengthening undergraduate curricula in science and technology as well as preparation of K-12 teachers.

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-John Holdren

EXPERT PRESENTATIONS & DISCUSSIONS

In each of the symposium’s themes, the event featured expert presentations and panel discussions. Every challenge was considered in its own right but also examined in tandem with others. “As the symposium unfolded, the deeply intertwined connections of air pollution to energy, environment to agriculture, and to health and aging became more evident,” said McDonnell Academy Scholar Girish Sharma.

On Oct. 12 at Tsinghua University’s campus, Gabriel M. Leung, dean of medicine at The University of Hong Kong, delivered a keynote on “Global Health Challenges and Sustainable Solutions.” He delved into what he described as the equivalent of “the four horses of the Apocalypse” in public health: the unfinished epidemic of infectious diseases, the emerging epidemic of chronic conditions, the unnecessary epidemic of environmental insults, and the unethical epidemic of inequalities.

Later that day, a keynote by Gary Calabrese, senior vice president and global research director, Corning Inc., presented a new solution currently being developed by Corning for cleaning the air by using proven technology made for vehicles.

The afternoon session featured a keynote by Cari Casale, member of the Board of Directors, Syngenta. He explored how we can feed the planet with technology we have today. In his view, we have the means but lack the will to do it. Key to sustainable food production is “reconciling scientific reason and social concern,” said Casale. He also highlighted the problem of waste, noting that it is a behavioral issue that cannot be solved with economics.

The focus on agriculture, food and water, and climate change continued with presentations by Barbara Schaal, dean of the Faculty of Arts & Sciences at Washington University in St. Louis and Wenjia Cai, professor at Tsinghua University. Additional expert panels took place in each of the symposium’s themes on Oct. 13.
3MT® COMPETITION

Developed by The University of Queensland in 2008, the Three Minute Thesis (3MT®) celebrates the exciting research conducted by our students. It challenges them to communicate the significance of their projects to a lay audience in just three minutes. Among the highlights of the 7th International Symposium was the opportunity to hear fifteen presentations by graduate and professional students from the McDonnell Academy’s partner universities, who competed against each other in the symposium’s three thematic areas. In each session, a $1000 prize was awarded by a panel of judges while the audience voted to determine the people’s choice winner, awarded $500 in each theme. The winning presentations were announced at the closing dinner.

Thematic Area: Agriculture, Food & Water and Climate Change

- Candice Jones from The University of Queensland won the jury’s vote with her presentation entitled "A talking plant?!
- Philip Minderhoud from Utrecht University won the people’s choice prize with his presentation entitled “Forget about sea level rise: The sinking of land is the real problem.”

Thematic Area: Health & Aging

- Jasmeen Sethi from The University of Hong Kong won both the jury’s vote and the people’s choice prize with her presentation entitled “The Ovarian Cancer Games: Catching HNF-1β targets.

Thematic Area: Energy & Environment

- Po-Cheng Lin from Washington University in St. Louis won both the jury’s vote and the people’s choice prize with his presentation entitled “Turning Bacteria into Factories: Microbial Production of Fuels from Carbon Dioxide.”

Students from McDonnell Academy partner institutions took part in a 3-Minute Thesis (3MT®) competition during the symposium.

PRESIDENTS’ FORUM

At the Presidents’ Forum, led by Mark S. Wrighton, chancellor, Washington University in St. Louis, university leaders reflected on the dialogue at the symposium, what they took away from the discussions, and what areas of research and collaboration can be further strengthened in the future.

- Peter Høj, president, The University of Queensland, said “One of the things our students should learn is philosophy.” Høj also highlighted the importance of addressing topics such as antimicrobial resistance and aging populations, noting for example that the cost of caring for people with dementia is already one trillion US dollars.

- Marcelo Knobel, rector, State University of Campinas, remarked that “The strength of this network is the diversity.” Knobel suggested that we need to have more conversations on the topics of biodiversity and neglected diseases, and give greater consideration to how issues are tied to poverty and social inequality.

- Rocky S. Tuan, vice chancellor and president, The Chinese University of Hong Kong, stressed that the issues discussed at the symposium are all generated by Homo sapiens, and therefore to generate solutions, we have to go back to the source. At his institution, two courses are designed to prepare students to live and flourish in today’s complex world: the first on the practice of positive living, the second on grand challenges. In the first course, Tuan explained, students are taught to concentrate not on the fact that the glass is half-full or half-empty, but on the fact that “the glass is yours.” The second course addresses the need for personal ownership to tackle global challenges, for example, each student tracks personal energy consumption. In Tuan’s view, GPA should stand for three key ingredients: “Global perspective, Positive mindset, and Appreciation of cultural and intellectual difference.”

- Shalini Bharat, director, Tata Institute of Social Sciences, emphasized the need for the McDonnell Academy to take up the issue of malnutrition by considering the causes at the root of the problem – inequity and social inequality. Other topics of interest to Bharat include mental health issues, waste management, and big data analysis, particularly determining what we could be doing with the data.

- V. Rangaswamy, director, IIT Delhi, proposed three ideas for advancing collaboration through the McDonnell Academy network of partnerships. First, he stressed the need to have more initiatives to connect faculty from partner institutions through a grand challenges scheme supported by seed funding. Second, he noted the importance of discussing the issue of mental health problems, noting that student suicides are particularly troubling.

- Chan Wook Park, acting president, Seoul National University, stressed the importance of research into strategies to cope with the fourth industrial revolution and with rapid technological advance. He emphasized the need for collaboration with industry. He also highlighted the importance of discussing mental health problems, noting that student suicides are particularly troubling.

- Mark S. Wrighton urged the leader of partner universities to designate an ambassador from their institution to Washington University to help advance the academic commerce among the McDonnell Academy’s member institutions.
CLOSING DINNER

During the closing dinner following the Presidents’ Forum, Chancellor Wrighton announced the creation of the James and Mary Wertsch Fellowship for a Scholar, named to honor the Academy’s founding director, who is transitioning from the role and returning to the Washington University faculty this January. At the same event, Kurt Dirks, vice chancellor for international affairs, announced that the 8th McDonnell Academy International Symposium will be held in St. Louis in October 2020.

BUILDING AUTHENTIC PARTNERSHIPS

Eleven workshops met in parallel on the last day of the symposium at Tsinghua University, giving participants the opportunity to address a range of topics in greater depth.

One of these sessions, led by William Powdery, director of the Institute for Public Health at Washington University and Feng Cheng, director of the Global Health Program at Tsinghua University, explored the opportunity to engage partners from the U.S., China and Africa in global health partnerships. An opening workshop provided a key question of broader significance about how research universities should go about building authentic partnerships.

The presenters shared some potential pitfalls and lessons for establishing fruitful international collaborations. They emphasized the need to forge strong people-to-people exchange based on common interest, rather than relying on MOUs and “fly-in-and-out investigators,” as too often they fail to result in meaningful collaboration. As Powdery summed it up, “Partnerships only really matter when people get together.”

Feng Cheng and Ji Liang from Fudan University shared the view from the Chinese perspective that China’s aid to Africa is substantial and continues to increase. They noted the need to round out complex issues that must be addressed, such as sustainability, long-term commitment, and understanding of the local context and culture to implement bi-directional benefits and a sense of joint ownership of the projects. They also highlighted the need for genuine community engagement and understanding of the local context and culture to implement successful initiatives.

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Francis Dodoo, pro-vice chancellor for research, innovation and development, University of Ghana, and George Kyeli, who holds a dual appointment at the University of Ghana and Washington University School of Medicine, presented perspectives from Africa. Dodoo highlighted the need for capacity building, particularly for faculty, as African universities are using a large number of faculty who do not have terminal degrees. Mandatory retirement at the age of sixty further exacerbates this problem. He stressed the importance of incorporating local input and the local context in conceptualizing a project and committing to equal partnership from the outset, not just in the implementation stage. He also recognized the importance of the Chinese experience with the kinds of issues Africa faces. He concluded that it is important to work together because “migration flows mean that problems that are in Ghana today will be in China tomorrow.”

Kyeli stressed the importance of avoiding one-sided partnerships, which can be perceived as “research colonialism.” He also described a huge capacity gap, particularly among mid-level personnel in Ghana without sufficient training. Kyeli suggested institutionalizing relationships with African partners and considering setting up global health institutes or centers in Africa. He also stressed the importance of having African input into grant writing and training, and allowing African investigators to take the lead.

Mary McKay, dean, Brown School at Washington University, and Carolyn Leserogel, associate dean for global strategy and programs at the Brown School, shared the view from the U.S. and their experience in developing collaborations in Africa. McKay pointed out the importance of having investigators who fly in and out of Africa rather than having a long-term partnership with bi-directional benefits and transparency about shared resources.

She highlighted her work with the SMART Africa Center across South Africa, Ghana, Kenya and Uganda, as an example of her approach to forging such collaborations. This consortium addresses child mental health issues that are largely overlooked, as only 1-2% of budgets in Africa are spent on mental health. The consortium provides support in schools and for family-based interventions. The potential for impact in Uganda, where children make up 56% of the total population, is very significant. McKay also stressed the role of policy makers and NGOs in implementing and sustaining what is discovered. From presenting in front of the Ugandan parliament to engaging NGOs, influencing policy to make science matter is an important piece of having an impactful project.

Based on her experience working with Samburu pastoralists in Kenya for more than two decades, Leserogel addressed the need to engage communities and people into the design of programs and to understand cultures and how cultures change. Too often researchers fail to understand the needs and perspectives of the people and include them throughout the process of developing and delivering services. Without genuine community engagement, even well-intentioned efforts often fall short of the desired outcome.

ADDITIONAL WORKSHOPS

AGRICULTURE, FOOD & WATER

Policy Issues: Agriculture and the Environment, convened by Barbara Schaal (Washington University in St. Louis) and Xin Pang (Tsinghua University)
Plant Biology for Agriculture, convened by Daqiu Xie (Tsinghua University) and Joe Jez (Washington University in St. Louis)

ENVIRONMENT & ENERGY

Environmental Nanotechnology, convened by Shubo Deng (Tsinghua University), Daniel Gaimmar (Washington University in St. Louis) and Irene Lo (Hong Kong University of Science and Technology)
Synthetic Biology, convened by Fuzhong Zhang (Washington University in St. Louis) and Xin Hui Xing (Tsinghua University)
MACEEP Aerosol Network and Combustion Aerosol, convened by Shuling Li & Jiankun Jiang (Tsinghua University) and Richard Axelbaum & Pratim Biswas (Washington University in St. Louis)

PUBLIC HEALTH & AGING

Social Innovation and Public Health, convened by Li Zou (Washington University in St. Louis) and Sheying Chen (Tsinghua University)
Materials for Health and Wellbeing, convened by Guy Genin (Washington University) and Yanan Du (Tsinghua University)
Healthy Aging, Healthy Communities, convened by Gang Chen (Peking University), Nancy Morrow-Howell (Washington University in St. Louis) and Qiang Li (Tsinghua University)

OTHER TOPICS

Taking the Heat: Using Journalism for Educational Engagement on Climate, convened by Rick Dunham & Hang Min (Tsinghua University), John Sawyer (Pulitzer Center, Washington DC), Sean Gallagher (Freelance Photojournalist) and Anthony Kuhn (National Public Radio)
Trends in Graduate and Professional Education: What You Need to Know, convened by William Tate & Nancy Staura (Washington University in St. Louis) and Jingzhou Zheng (Tsinghua University)

DEAN WILLIAM TATE PRESENTED AT THE WORKSHOP ON “TRENDS IN GRADUATE AND PROFESSIONAL EDUCATION.”

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MEDIA COVERAGE OF THE SYMPOSIUM

The symposium’s proceedings were covered in the Record, Washington University in St. Louis’ online publication, as well as in dozens of media outlets throughout China—including English and Mandarin media—with a total audience reach of more than 100 million across print, broadcast and online video outlets.

• Global Times
• China News Service
• CGTN
• Youku
• Sohu.com
• Economic Daily
• China Youth Daily
• China Environment News
• 21st Century Business Herald
• China Philanthropy Times
• China Pharmaceutical News
• People News
• Tencent Health
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