

J-WAFS Food & Water News

June 2016

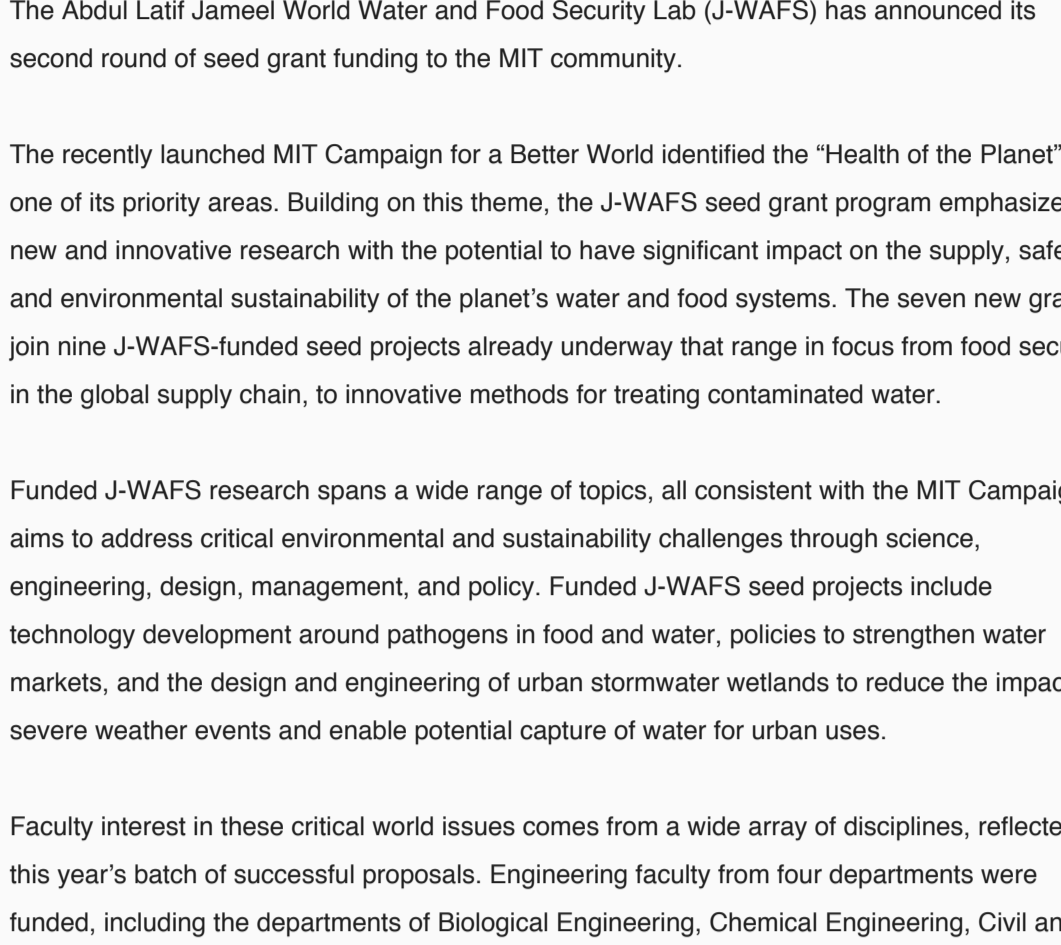
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News Items

J-WAFS announces 2016 seed grants recipients

Principal investigators receive grants of up to \$100,000 per year for up to two years for innovative research on food and water challenges.



The Abdul Latif Jameel World Water and Food Security Lab (J-WAFS) has announced its second round of seed grant funding to the MIT community.

The recently launched MIT Campaign for a Better World identified the "Health of the Planet" as one of its priority areas. Building on this theme, the J-WAFS seed grant program emphasizes new and innovative research with the potential to have significant impact on the supply, safety, and environmental sustainability of the planet's water and food systems. The seven new grants join nine J-WAFS-funded seed projects already underway that range in focus from food security in the global supply chain, to innovative methods for treating contaminated water.

Funded J-WAFS research spans a wide range of topics, all consistent with the MIT Campaign's aims to address critical environmental and sustainability challenges through science, engineering, design, management, and policy. Funded J-WAFS seed projects include technology development around pathogens in food and water, policies to strengthen water markets, and the design and engineering of urban stormwater wetlands to reduce the impact of severe weather events and enable potential capture of water for urban uses.

Faculty interest in these critical world issues comes from a wide array of disciplines, reflected in this year's batch of successful proposals. Engineering faculty from four departments were funded, including the departments of Biological Engineering, Chemical Engineering, Civil and Environmental Engineering, and Electrical Engineering and Computer Science. Other funded principal investigators are from the Department of Chemistry and the Department of Earth, Atmospheric and Planetary Sciences (EAPS), in the School of Science, as well as from the Sloan School of Management. Many others vied for the available pool of funding this year. Renee Robins '83, executive director of J-WAFS, notes that "MIT faculty are motivated to apply a broad range of research tools and expertise to address the world's water and food problems. Following the pattern of last year's call for proposals, we continue to see interest from a diverse cross-section of faculty, including many who are just starting to investigate these issues."

Says J-WAFS director John Lienhard, the Abdul Latif Jameel Professor of Water, "The MIT community is strongly committed finding sustainable solutions for humankind's growing need for clean water and safe, abundant supplies of food. These grants continue our work in making a better world."

[Click here](#) to see the funded projects.

[Click here](#) for full the MIT News story.

MIT announces The Campaign for a Better World

On May 6, MIT President L. Rafael Reif announced the official launch of the Campaign for a Better World, the university's comprehensive fundraising initiative aimed at advancing MIT's work on some of the world's biggest challenges.

The Campaign is guided by six priority areas that span the full breadth of MIT's members and capabilities. "A central challenge of our time is how to build a sustainable future for the whole human family," said President Reif. Therefore, one priority area is "Health of the Planet," which addresses critical environmental and sustainability challenges facing humankind through science, technology, design, management, and policy.

One of the three initiatives constituting the Health of the Planet area is Water and Food, placing J-WAFS' activities squarely in the Campaign's "Better World" target. Supporting not only research but also the development of novel solutions, MIT aims for real-world impact that will ensure the sustainable supply of clean water and food for a growing world population. With goals such as safer drinking water and better climate predicting for more resilient agriculture, J-WAFS is well-positioned to advance MIT's Campaign objectives, and *vice versa*.

For the official Campaign for a Better World website, [click here](#).

Upcoming MIT Events

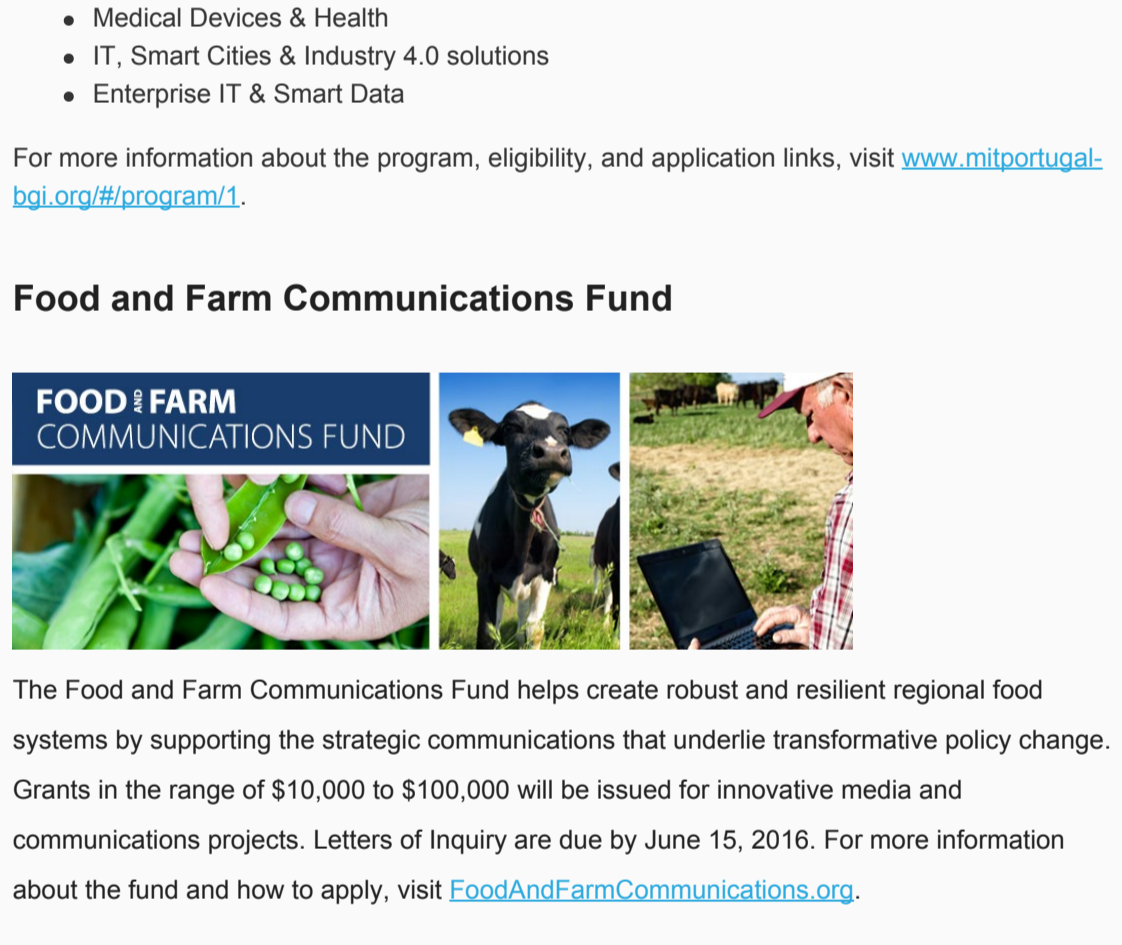
MIT Summer Course: Agriculture, Innovation, and the Environment

When: June 13-17

Where: MIT Campus

An 80 percent increase in agricultural production is needed by 2050 in order to sustain a projected population of nearly 9.5 billion people. Achieving this gain will require innovative technologies to make agriculture more efficient. This course—designed for people in executive roles in R&D, engineering, government administration (US or overseas), and academia—focuses on just that. Led by Markus J. Buehler, head of the MIT Department of Civil and Environmental Engineering, and engaging several other distinguished academics across the disciplines, this course offers a unique interdisciplinary experience on the emerging field of study. For further details and to register, [click here](#).

Funding and Other Opportunities



The Rockefeller Foundation Cassava Innovation Challenge

Cassava is the main source of nutrition for approximately 50 percent of Africa's 1 billion people. This root crop has a very short shelf life, though. To address food spoilage, the Rockefeller Foundation, Dahlberg, and the International Institute of Tropical Agriculture (IITA) have launched The Rockefeller Foundation Cassava Innovation Challenge, a global competition that aims to increase the shelf life of cassava in Nigeria by rewarding novel solutions with technical assistance and up to \$1 million in funding. The Cassava Challenge is open to both non-profit and for-profit organizations, including governmental and inter-governmental organizations. Applications will be accepted until July 8, 2016. For more information, visit [RockefellerFoundation.org/CassavaChallenge](#).

Agriculture and Food Research Initiative: Food Security Challenge Area

The USDA's Agriculture and Food Research Initiative (AFRI) Food Security Challenge Area goal is to sustainably increase agricultural productivity and the availability and accessibility of safe and nutritious food. For FY 2016, the AFRI Food Security Challenge seeks applications in two priority areas: pollinator health and breeding, and phenomics of food crops and animals. Recipients will be awarded with up to \$1 million in grants. State Agricultural Experiment Stations, colleges and universities, research institutions and organizations, federal agencies, national laboratories, private organizations or corporations, and individuals are eligible to apply. Applications will be accepted until July 7, 2016. For more information, [click here](#).

Building Global Innovators - 2nd and Final Call

The deadline for the second and final call of Building Global Innovators' 7th Edition is almost here, June 5th, 23h59 GMT.

BGI has been building global innovators for the last six years, having accelerated 117 companies, 74 of which are active. The record survival rate of 67.3% places the accelerator among the best in the world! We are now looking for the next round of audacious entrepreneurs with breakthrough technologies to join us.

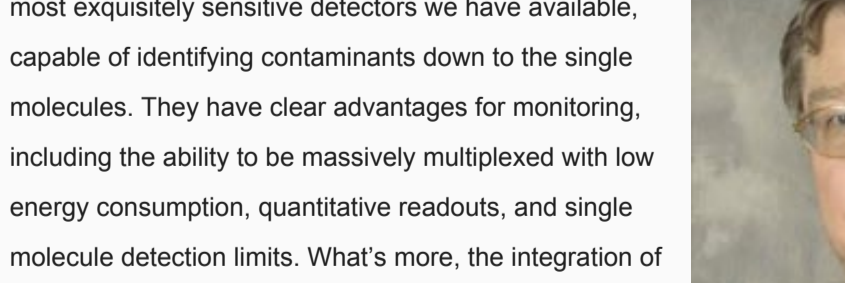
Building Global Innovators (BGI) is a transnational accelerator directed at aspiring entrepreneurs and tech-based startups and/or spin-outs (maximum 5 years old), working on a technology-based solution to a global problem. BGI is powered by the unique collaboration of the University Institute of Lisbon (ISCTE), the MIT Portugal Program, Deshpande Center for Technological Innovation, and the Martin Trust Center for Entrepreneurship.

The accelerator invites ambitious entrepreneurs to apply in one of the four areas:

- Water Economy
- Medical Devices & Health
- IT, Smart Cities & Industry 4.0 solutions
- Enterprise IT & Smart Data

For more information about the program, eligibility, and application links, visit [www.mitportugal-bgi.org/#/program/1](#).

Food and Farm Communications Fund



The Food and Farm Communications Fund helps create robust and resilient regional food systems by supporting the strategic communications that underlie transformative policy change. Grants in the range of \$10,000 to \$100,000 will be issued for innovative media and communications projects. Letters of inquiry are due by June 15, 2016. For more information about the fund and how to apply, visit [FoodAndFarmCommunications.org](#).

World Food Programme Innovation Bootcamp

The World Food Programme is looking for creative leaders with previous start-up experience to join them in Munich, Germany for a two-week bootcamp summit to work on key issues in the fight against hunger. To apply, email your LinkedIn and 2-3 paragraph pitch describing your start-up idea for how to help the WFP reach zero hunger by 2030. For more information, visit [WFP.org/Innovation](#).

Summer UROP needed for India Water Quality Monitoring Policy Analysis Project under J-WAFS

This UROP project is aimed at evaluating the impact of new policy practices through data mining the online water data collection system to inform progress of water monitoring protocols. This project is highly interdisciplinary (combining implementation in policy framework, statistical analysis and modeling building) and will be readily knowledgeable (thus highly rewarding) where the results generated can be immediately communicated to local stakeholders in India to gain feedback and eventually institute actual change in the system. Experience in statistical analysis and data mining are preferred (proficiency in Matlab, R and the like), but an interest on the topic of data-informed decision making and a strong willingness to learn are always more valued. If interested, please send a paragraph detailing on why you are interested in this project, as well as your resume to [Charlene Ren](#).

The Blue Gold Innovation Fund - smart solutions for agriculture and water management

Bringing innovations in agriculture and water management to the coastal regions of Bangladesh is the idea behind the Blue Gold Innovation Fund; a fund which opened early 2016 and for the coming three years has €4.3 million available for the execution of feasibility studies, the implementation of pilots, and the upscaling of successful projects. Blue Gold is a development program in Bangladesh that is jointly financed by the Embassy of the Kingdom of the Netherlands in Dhaka and the Government of Bangladesh. For more information, visit [www.bluegoldbd.org/more-information/innovationfund](#) or contact [Boudewijn Sterk](#).

J-WAFS Highlight

A Multiplex, Nanosensor Platform for the Real Time Monitoring of Food and Water-borne Contaminants

We all want to know what is in our water and food and feel secure that what we consume to sustain life will do us no harm. Compared with measures such as wearing a seat belt in a car to reduce risk of injury from a car accident or taking medication to reduce the risks related to high blood pressure, however, it is difficult and cumbersome for consumers to identify and thereby reduce exposure to potential toxins, allergens, or other contaminants that may be compromising the health and safety our families, our communities, and ourselves.

This realization was the point of departure for a J-WAFS Solutions project led by Michael Strano (pictured left), Carbon P. Dreyfus Professor of Chemical Engineering, and Anthony J. Sinskey (pictured below), Professor of Microbiology and Health Sciences & Technology. Together with their team of research scientists, graduate students, and postdoctoral associates, they are attempting to leverage new MIT technology to create a simple, low-cost, portable, point-of-use platform for the detection of three broad categories of food and water contaminants: bacteria, heavy metals, and allergens.

This platform will be a solution to all-too-familiar issues at the center of water and food security. Today, testing the quality of water and food is primarily left to producers or government agencies and involves collecting samples and sending them to a lab – a process that drains both vital time and resources. The few options for consumers rely on kits that contain sensors that can only test for one or two contaminants. While this allows detection of potential contaminants at the point of use, current technologies target specific pathogens, metals, or allergens, but never a combination. This is because the testing methodologies for different potential contaminants involve distinctive processes that were developed using very different scientific and engineering approaches, and so are very targeted to specific substances.

In order to solve this problem, the research team of Strano and Sinskey is pioneering technology that can test for a wide variety of potential contaminants through the use of nanosensors. As Professor Strano explains, these nanosensors are the most exquisitely sensitive detectors we have available, capable of identifying contaminants down to the single molecules. They have clear advantages for monitoring, including the ability to be massively multiplexed with low energy consumption, quantitative readouts, and single molecule detection limits. What's more, the integration of this technology into a point-of-consumption platform could drastically change the approach to food and water testing in the future, allowing for rapid and comprehensive testing.

In recent months, the research team has continued to investigate the scientific aspects of molecular recognition and aims to publish their findings. Meanwhile, they are steadily moving forward developing their technology, working on the creation of a handheld prototype. As supported by J-WAFS – in partnership with the Deshpande Center for Technological Innovation – the project benefits from an industry mentor who works with the team to help design and position a new product in the competitive food safety analytics market. Throughout the developing world, there is an unmet need for testing technologies that are low-cost, do not need to be deployed by an expert, and avoid the time-consuming process of sending samples to a laboratory. In developed countries, growing prevalence of food allergies and concerns about food poisoning and other toxins suggest a strong need for real-time, point-of-consumption testing. Professor Strano remains resolute in his belief that his team's work can make this a reality.

In his words, "If you look at human health, we place a lot of focus on medical technology. But if you look back on the 19th and 20th century, public health and prevention measures have done most of the heavy lifting; access to clean water and sanitation alone has gotten rid of many of the scourges. The next step is to take that even further by empowering greater individual control."

