J-WAFS Water and Food Seed Grants
2024 Request for Letters of Interest

1. About J-WAFS and this request for letters of interest

Population growth, climate change, urbanization, and development are bringing unprecedented challenges to the world's diverse needs for water and food. The Abdul Latif Jameel Water and Food Systems Lab, J-WAFS, was established in 2014 as an Institute-wide effort to bring MIT's unique strengths to bear on these problems. J-WAFS is seeking proposals from MIT PIs for new, innovative research that has the potential to have significant impact on issues and challenges related to the world's water and food supply for human use.

J-WAFS funds a diverse portfolio of research relevant to water and food—spanning fundamental science, engineering and technology, supply chains, big data, business models, development efforts, economics, climate interactions and impact, urban design and infrastructure, and more—through seed grants and other funding mechanisms. We invite proposals for projects that can effect meaningful, perhaps even measurable, improvements to humankind's need for sustainable supplies of water and food.

Water and food issues are vast, and responses to many specific challenges require considerations that go beyond a single discipline. Further, problems of water and food take different forms in different parts of the world, and many solutions call for a regional focus addressing specific contextual considerations, whether geographic, economic, social, or other. Thus, interdisciplinary proposals and proposals with international reach or a specific geographic focus are also welcome.

J-WAFS anticipates funding up to eight seed grants of up to $150,00, comprising up to $75,000 per year for one to two years, free of overhead charges, to be spent at MIT. We are open to eligible proposals that further J-WAFS' mission, from all MIT schools and departments.

2. Process and Timing

*** Note that our seed grant proposal process has changed. We are now requiring an initial letter of interest. Full proposals will be welcome by invitation based on review of the LOIs. ***

Mid-October, 2023: J-WAFS RFP announced
November 3, 2023: J-WAFS WizeHive online submission portal open for letters of interest
11:59 pm, Monday December 11, 2023: letters of interest due
By early January, 2024: Invitations to submit full proposal

11:59 pm, February 14, 2024: Full proposals due
Spring, 2024: Announcement of funded projects
September 1, 2024: Start of funded projects

3. Funding and eligibility

Principal Investigators submitting a proposal must meet one of these two eligibility criteria:

- *MIT professor*
- *Member of the MIT research staff with principal investigator privileges (generally senior or principal research scientist, or senior or principal engineer)*

 The lead PI will have full responsibility for conducting and reporting on the research supported by the grant. Applicants may participate in up to two proposals.

Proposals in all areas related to water and food security, safety, and sustainability for human use are eligible for funding. Areas of high interest are detailed in the next section. Proposals should be for new, innovative projects that are distinct from ongoing or prior research. Requests for funding to supplement existing research, or for course or curriculum development, will not be considered.

Seed grant funding is available up to a maximum of $75,000 per year for one or two years. We are looking for innovative **early-stage** projects that can benefit from one to two years of funding in order to: (1) establish proof of concept or gather critical data that will position the project to qualify for other future sources of funding; or (2) have a clear and significant outcome without subsequent awards. Projects that are intended to have real-world impact are favored. Multidisciplinary projects and projects that have well-defined regional or international outreach or collaboration are also invited, noting that subawards are not allowed. New collaborations including team members in different MIT schools are encouraged. Relevant interactions with industry are also encouraged.

Proposals that are primarily for equipment purchase will not be considered; equipment should be limited to no more than 20% of the total budget. Equipment purchases are expected to directly support the proposed research and should occur early in the project.

4. Areas of interest

J-WAFS is interested in supporting all areas related to the water and food systems that serve human needs. The topics detailed below are examples of some of the most significant water and food challenges that seem to align with MIT strengths, and these examples provide an indication of the variety of research topics that J-WAFS is interested in funding. However, proposals in other areas related to water and food for human use that are not explicitly detailed below are also welcome. We are open to research relevant to both developed and developing countries.

Our highest priority for funding this year will be proposals that address aspects of the climate/food nexus and climate/water nexus.

1. **Water**
   - **Technologies for advanced water treatment and delivery systems**: particularly purification, disinfection, wastewater reuse, and desalination, including energy efficiency, environmental protection, and novel processes, in municipal, industrial, and agriculture sectors
   - **Sensors and data analytics**: Sensors for contaminants in recycled water, sensors for contaminants in water generally, low-cost sensors for the developing world, and data analytics for water distribution networks
   - "**Contaminants of Emerging Concern**" **(CECs)**: in drinking water, including PFAS
   - **Solutions for rural communities' water needs**: globally, but especially for Native American and other underserved communities in the U.S.
   - **Economic and policy incentives**: to reduce water consumption and promote overall water conservation

2. **Food Science and Safety**
   - **Food science/biotechnology**: biotechnology for improved nutrition, climate resilience, crop productivity, reduction in fertilizer demand
   - **Food safety**: science, technologies, or policy to improve food safety and contaminant detection
   - **Food demand**: strategies to shift food demand to climate-protective diets

3. **Food Waste**
   - **Technologies**: particularly to improve food storage, transport, preservation, and loss reduction, as well as technologies to improve market access for small and medium-scale producers in developing countries
   - **Business innovations and processes:** to support waste reduction across the supply chain, including for smallholder farmers, food processors, distributors, and consumers

4. **Agriculture/Crop Productivity**
   - **Climate/agriculture nexus**: Characterizing greenhouse gas emissions from agriculture; ways to mitigate the agriculture sector's impact on climate; climate resilience of our food systems including science, technologies, policies, demand-side management, or locally adaptive practices for agriculture that address the need for climate change adaptation and resilience, including genetic engineering and other biotechnologies
   - **Water management under weather extremes:** Irrigation, supply management, and other approaches to adapt to increasing drought; reducing agricultural threats arising from flooding and extreme storm events

- **Soil quality:** including soil sampling and monitoring, soil chemistry, nitrogen cycling, and solutions to restore and build agricultural soil
- **Fertilization:** improvements or alternatives for fertilizer and fertilizer application; reduction of environmental impacts of fertilizer and pesticide use
- **Technological and business innovations**: especially for smallholder farmers in the US and internationally
- **Sensors and data analytics**: sensors for soil health, data analytics to improve agricultural productivity or reduce greenhouse gas emissions from farming activities; precision agriculture
- **Solutions for rural communities' food needs**: globally, but especially for Native American and other underserved communities in the U.S.

5. **Other challenges or strategies generally related to water supply and water quality, agriculture, food supply, and food safety**

Please note*:* Proposals that indicate policy guidance as a primary outcome should identify specific decision makers who are able to act upon it and should include a well-defined timeline and process by which this guidance will be discussed with them. Policy-related proposals will be strengthened by specific evidence that policy makers need answers to the questions addressed by the research.

5. J-WAFS Solutions

The J-WAFS Solutions program aims to help MIT faculty and students commercialize breakthrough technologies and inventions by transforming promising ideas at MIT into innovative products and cutting-edge spinout companies. J-WAFS Solutions has the mission of moving water and food technologies from labs at MIT into the commercial world, where they will improve the productivity, accessibility, and sustainability of the world's water and food systems.

The J-WAFS Solutions request for proposals will be issued in early 2024. *If your project involves technology near the commercialization stage, please consider whether a Solutions grant may be more appropriate than seed funding. Inquiries may be directed as indicated below in section #9.*

6. Proposal process

6.1. Letter of Interest instructions

Letters of interest should be submitted online through J-WAFS' web-based proposal portal, https://jwafs.mit.edu/seedgrantportal. The portal will be open for submissions as of November 3, 2023. Instructions for the letter of interest are below, and templates and forms can be obtained from the portal. RAS review is not required and the "five-day rule" does not apply.

6.2. Submission checklist

1. Proposal Information Form (webform on application site)
2. Single PDF with file name "PILastName-JWAFS2024LOI.pdf," containing:
   a. LOI narrative (max 2 pages)
   b. Research team and cost narrative
   c. Appendices (may include technical figures, references)

6.3. Letter of interest narrative

The narrative should be single-spaced, 11 point font with 1" margins and numbered pages, and it should address the topics below. *The narrative should be no longer than two pages exclusive of graphs and tables*.

1. **Statement of purpose** (1-2 paragraphs**)** – What is the problem being addressed? Describe: relevance to water and/or food and significance of the proposed work; prior work and relevant preliminary results; innovative aspects of proposed work; objectives including expected follow-on research.

2. **Technical section** (1 to 1.5 pages) – Describe the specific aims and the research approach/ methods/tasks that the project would entail. Describe deliverables or other metrics for evaluating success.

3. **Post-funding potential** (1 pargraph) – Your proposal should describe potential future research and funding, technology deployment, scale-up, etc., that will be enabled by the work supported by J-WAFS. Please be as specific as possible when discussing potential future funding sources. Alternatively, if the funded work will have an impact without subsequent awards, please clearly describe this. (If you have submitted or plan to submit a proposal to other MIT funding sources, indicate this in the WizeHive submission form.)

6.4. Research team and cost narrative

1. On a separate page, identify by name or position the members of the research team with a brief summary of research responsibilities and/or roles. Include names of RAs and post-docs if known. If applicable, describe any partnerships external to MIT. (Note as stated above under "Budget" that no sub-awards are allowed and the seed grant only covers MIT effort—see also the footnote in the budget section.)

2. Include one short paragraph describing what the support will be used for (e.g. RA, post-doc, and/or faculty summer salary; M&S; equipment; travel; other).

6.5. Appendices

A. Technical appendix (graphs and tables)
B. References

7. Evaluation process and review criteria

The review process will evaluate and consider the following:

- Relevance to J-WAFS mission

- Technical merit and potential impact of research
- Innovativeness and differentiation from currently funded or past research
- Qualifications of research team for the work proposed
- Potential for future research funding or impact, e.g. technology development/deployment

8. Information about J-WAFS Seed Grants

8.1. Budget

Seed grants are available up to a maximum of $75,000 per year for two years, i.e., up to $150,000. There is no F&A or fund fee. Graduate student RAs supported on the grant will receive the 55% Institute tuition match. Other personnel should have appropriate salary, EB, and vacation accrual covered. Faculty summer salary should be limited to one summer month per PI over the entire grant period, and total faculty salary (for all PIs and including EB) may not exceed 15% of the award. Total equipment costs are limited to 20% of total budget. Other acceptable budget items include: staff researchers or post-docs, technicians, M&S and other research expenses, and justifiable travel for MIT personnel or for outside collaborators. *No sub-awards or pass-throughs are allowed*; this funding is intended to support MIT research.[1]

8.2. Reporting

J-WAFS will assess the success of funded projects in meeting the stated objectives. Each funded project will be required to submit six-month progress reports that detail project activities and research outcomes during the reporting period, and a final report that summarizes all project outcomes and follow-on activities. Reports also identify students supported by the grant, and dissertations, papers, or presentations arising from the work supported by the grant. The "highlights" section of the report will be made public. Due dates will be noted at the award of the grant, and reporting instructions and specific contents will be provided approximately four to five weeks before their due date.

8.3. J-WAFS Information Session for New PIs

J-WAFS will hold an information session for new project teams during the last few weeks of August. PIs are encouraged to attend, and funded projects must have at least one representative (PI, funded staff member, RA, AA, and/or FA) in attendance.

8.4. J-WAFS Research Workshop

J-WAFS research workshops, typically held in the fall, provide the opportunity for funded PIs to present to one another on their research aims and progress. These workshops are by invitation and are generally limited to the

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[1] Special consideration may be given to Whitehead Institute research for PIs who also hold appointments at MIT. Please contact J-WAFS to discuss funding, OH, and IP issues before applying. (See Section 9 re: Inquiries.)

MIT community in order to protect prepublication research results. PIs are required to attend, and students and other lab members are welcome.

8.5. Publications/Statement of support

All publications arising from work supported by J-WAFS funding should acknowledge support from "The Abdul Latif Jameel Water and Food Systems Lab at the Massachusetts Institute of Technology." Publications arising from the funded work should be sent to Carolyn Blais, J-WAFS' communications and program manager, (cblais@mit.edu).

In addition, J-WAFS has adopted an open-access (OA) policy for research awarded by J-WAFS and funded through MIT's endowment and other gifts to the Institute. We ask J-WAFS researchers to familiarize themselves with this policy and consider it when selecting journals in which to publish J-WAFS-funded research. J-WAFS OA policy has two elements:

1) All J-WAFS funded papers must be available open-access as soon as possible and no later than one year after publication;

2) If authors choose to pay for open access, the use of J-WAFS funds for article processing charges is capped. J-WAFS' funding for an OA article processing charge (APC) is limited to $3,500 per paper. Untenured faculty may request exceptions.

8.6. Financial auditing

All funded projects will be subject to financial auditing, including requests for documentation of salaries and any expense listed on the account. The PI is responsible for reviewing salaries charged to projects, and for validating and certifying percentages of salary charged to a project. Salary certification is expected to be completed in a timely manner. Salaries for personnel or stipends for students on the project should be charged over the course of the project and not all at once at the end. No equipment expenditures will be allowed during the final six months of the funding period. J-WAFS actively monitors all project accounts. PIs are responsible to cover any cost overruns in a timely manner.

8.7. Changes to ongoing projects

Any change in the budget, work plan, deliverables, personnel, and requests for no-cost extensions should be directed in a timely manner to J-WAFS staff for consideration. In general, however, projects will be expected to conclude on scope, on time, and on budget. Unapproved cost overruns will be the responsibility of the PI(s) to cover. Unexpended funds will be returned to J-WAFS unless a no-cost extension is approved.

9. Inquiries

Please direct general process questions to:
Carolyn Blais, Communications and Program Manager, J-WAFS, cblais@mit.edu

Please direct budget or financial questions to:
Nicholas Pasinella, Financial and Project Coordinator, J-WAFS, bpnas@mit.edu

Please direct questions about eligibility for seed grants or Solutions grants to:
Rohit Karnik, Associate Director, J-WAFS, karnik@mit.edu
Renee Robins, Executive Director, J-WAFS, rrobins@mit.edu