Plant Protein Enhancement Request for Application

The Foundation for Food and Agriculture Research (FFAR) is seeking applications through our Crops of the Future Consortium (COTF). COTF is a public-private collaborative formed by FFAR to solve research gaps common across the Ag industry. We are seeking innovative and potentially transformative research focused on development of knowledge and resources necessary to enhance the supply chain for plant-based protein in a profitable and sustainable manner. For 2019, FFAR anticipates funding at least one meritorious and transformative application.

> ## Key Dates
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> Full Application Receipt Open: Wed, August 7, 2019 at 12:00pm ET
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> Full Applications Due: October 9, 2019 at 5:00 PM ET
>
> Award Notification: Early 2020
>
> Anticipated Project Start Date: Spring 2020

What we are looking for

The overarching goal of this RFA is to **support innovative research necessary for improving the physico-chemical properties, yield and total plant protein for human consumption. The RFA seeks to provide knowledge and resources needed to enhance the supply chain for plant-based protein in a profitable and sustainable manner.** FFAR and its co-funders are committed to supporting research on the following topics:

1. **Genomic resources and a technology toolbox for new or underutilized protein crops.** Establishing a reliable and sufficient supply of high-quality protein sources is critical for development of a sustainable plant-based protein industry. Most commercially available plant-based protein ingredients come from only 2 percent of the 150-plant species on which today's global food supply depends. Investigating genetics and breeding for improved performance has the potential to yield substantial gains in the production of sustainable and nutritious protein sources. With the identification and utilization of novel plant protein sources comes an opportunity to cultivate innovative farming practices. Concerted breeding or strain improvement efforts can provide underexploited plant protein crops with gains in yield, robustness, and disease resistance like what has been achieved for decades with commodity crops, such as corn and soy. This can decrease the cost of these novel protein sources and increase yield, making them more attractive to farmers seeking new crop opportunities. New species and those already in production will be considered.

   Research topics covered:
   a. Preferred crops: pulses, millet and lentils

b. Genomics, quantitative genetics and phenomics
c. Tissue culture, gene editing and biotechnology

2. **Enhancing functional and nutritional properties of plant proteins for plant-based food applications.** The inherent characteristics of the proteins, such as size, amino acid composition, and post-translational modifications, determine how well the protein concentrate or isolate will function in the final product. The quality and performance of plant-based food would be greatly advanced by implementing environmentally friendly methods for protein conditioning, which increase the desirable functional traits of a protein, such as gelation capacity, solubility, and fat adsorption. There is also room for more sophisticated breeding or enhancement to develop strains that are uniquely suited to plant-based food applications. Innovation opportunities in this area include expanding and diversifying our use of plant protein sources. For instance, specifically breeding plants for high levels of proteins that can be easily isolated will improve efficiency in obtaining purified proteins from the whole plant.
   Research topics covered:
      a. Biochemistry and metabolomics related to improving protein characteristics
      b. Biofortification and enhanced nutritional properties
      c. Improved sensory profiles

3. **Performing market-based analyses for new or underutilized and/or production systems of proteins for plant-based food.** One of the barriers to cultivating novel species or strains or for implementing new processing methodologies is the lack of a comprehensive assessment of the potential costs and market demand, yields, substitutability and other factors that influence commercial feasibility and decision-making. FFAR intends to fund socio-economic and market-based research for new and underutilized crops and production systems and will use best efforts to support topics not currently supported by other federal agencies.
   Research topics covered:
      a. Business risk and economic feasibility
      b. Market potential
      c. Research on other factors that impact development and commercialization

Research topics not covered by this initiative:
   1. Molecular mechanisms of pathogen transmission, pathogenicity, or disease resistance.

   2. Food safety-related research and traceability.

   3. Protein improvement specific for animal and aquaculture feed use.

Eligibility
The Foundation for Food and Agriculture Research welcomes applications from institutions of Higher Education, non-profit and for-profit organizations, government-affiliated researchers, and domestic and international organizations.

Any individual(s) with the skills, knowledge, and resources necessary to carry out the proposed research as Program Director(s)/Principal Investigator(s) is invited to work with his/her organization to develop an application for support.

Award Information

Anticipated Project duration: Between 12 and 60 months

Minimum Request from FFAR per Application: $300,000

Matching Funds are not required for this program

Reasonable budgets clearly work in favor of the applicant. Budgets that are not commensurate with proposed work or poorly justified will likely have a negative impact on the overall evaluation of the application.

- The number of projects selected for funding may vary.
- Indirect Expenses: A maximum of 10% of the total award may be used for indirect costs. FFAR's indirect cost allotment is not an indirect cost rate applied to the total modified direct costs but instead it is an overall allotment from the Total Funds Request, also known as the Total Project Costs, to be used for IDC. This means 90% of the total funds requested must go directly to the proposed research. For example, if you request the maximum, the total direct cost available to the project is $1,000,000/1.\overline{1} = $900,000$. Indirect costs cannot exceed 10% of the total.
- Indirect costs cannot exceed 10% of the total budget (FFAR contribution+ grantee's matching funding). Please carefully review our IDC policy in the Instructions Tab of the budget template.
- Estimated Number of Awards: to be determined. The number of awards depends on the quality and the total funds requested of successful application. The number of applications funded is left totally to the discretion of FFAR including choosing not to fund any applications under this opportunity.

Anticipated Award Date: Spring 2020

Application Components

Applicants are required complete the online application form. The uploaded application should be formatted using Calibri or Times New Roman, 11pt font, single spaced, 1-inch margins. Figures may be included as a separate file. If you have questions, please contact the FFAR Grants Management staff at grants@foundationfar.org.

To view the application, please download the application template here. Note that all applications must be submitted through FFAR's grant management system to be evaluated.

Full Application Components

Required components

- Project title (*up to 250 characters*)
- Proposed budget
  - Total FFAR request
  - Total optional matching funds
  - Total proposed budget (*FFAR funds + Optional Matching Funds*)
- Key Personnel
- Public abstract (*up to 500 words*)
- Project Executive Summary (*up to 1,000 words*)

- Project Description (*up to 1,665 words*)
- Innovation to be developed or accelerated (up to 665 words).
- Goals and objectives (*by year*; *up to 1,000 words*)
- Anticipated outcomes or outputs (*up to 1,000 words*)
- Budget justification (*up to 1,330 words*)
- Data Management Plan (*up to 500 words*)
- Barriers to adoption of your research outcome(s) (*Note: Collaboration on this issue with socio-economic scientists is highly encouraged.*) (*up to 665 words*)

- Organization Assurances
  - Research involving human subjects
  - Research involving vertebrate animals
  - Research involving Recombinant DNA
  - Research involving National Security implications
  - Research involving hazardous materials
  - Research involving human fetal tissue
  - Research involving NEPA review

Attachments
- Required Attachments
  - [Budget Form](#)
  - [PI and Key Personnel Biosketch](#): three-page limit per individual listed as PI or key personnel in the project
  - Current and Pending Support Form: complete for everyone listed as PI or Key personnel on the project
  - Project timeline (by year)
  - References cited
  - 5-slide summary/description of project

- Optional attachments to support project description: This section should not be used to circumvent the page/word limit for the Research Program Plan Section.
  - Letters of Support: Applicants may provide letters of institutional, collaborator, or stakeholder support for the proposed project, especially from matching funders. Please combine all letters of support into a single PDF document before uploading as an attachment.
  - Graphics, Figures, Equations, and Tables: The textbox for the Research Program Plan does not support equations, tables, graphics, and figures. Applicants may upload a PDF document with graphics, figures, tables, or a list of equations to support the research program plan. **Five-page limit.**

Application Submission Guidelines
Applications must be submitted through FFAR's online application receipt system. If you are a new user, register for an account by clicking the green "Register" button at the top right corner of the [home page](#). You will receive a confirmation email to activate your account before you can sign-in to your account. Once you log in, click on the corresponding program to start your application.

Only applications submitted through this portal will be considered eligible for evaluation. FFAR will not accept applications submitted by any other medium. There is a two-hour grace period for all deadlines. Applications that are not submitted by the deadline or within the grace period will not be accepted. To be fair to all our applicants, FFAR cannot grant an extension to applicants who missed the deadlines posted in the Key Dates section.

Application Review Process

Full Application Review
Applications will be reviewed using a two- stage peer review process: (1) External Peer Review, and (2) COTF funders review. In the first review stage, applications will be evaluated by an independent, external peer review panel of scientific experts using the application review criteria below. In the second review stage, applications judged to be most meritorious by external peer review panels will be evaluated and recommended for funding by the COTF funders based for best fit with the program priorities. All reviewers are required to read and acknowledge acceptance of FFAR's Conflict of Interest Policy and Non-Disclosure Agreement. We make reasonable efforts to ensure that applications are not assigned to reviewers with a real or apparent conflict with the applicant or project personnel. Reviewers with a conflict of interest are recused from evaluating or participating in the discussions of applications with which they have a conflict. Each stage of the review is conducted confidentially, and as such, FFAR is responsible for protecting the confidentiality of the contents of the applications. FFAR's Executive Director will approve each grant award recommendation made by the COTF funders.

Review Criteria
Full applications are evaluated based on scored primary review criteria. The bullets under each criterion may serve as a guideline to applicants when writing their applications, and as a guideline to reviewers on what to consider when judging applications. The bullets are illustrative and not intended to be comprehensive. Reviewers will evaluate and score each primary criterion and subsequently assign a global score that reflects an overall assessment of the application. The overall assessment will not be an average score of the individual criterions; rather, it will reflect the reviewers' overall impression of the application. Evaluation of the scientific merit of each application is within the sole discretion of the peer reviewers and they may raise additional factors to consider that are not covered in the bullets for each criterion.

Primary Review Criteria
Primary criteria will evaluate the scientific merit and potential impact of the proposed project. Concerns with any of these criteria potentially indicate a major flaw in the significance and/or design of the proposed work. Examples of primary review criteria are: Novelty, Innovation, and Originality; Impact and Outcome; Feasibility; and Partnerships.

Novelty, Innovation, and Originality (30%)
- Does the application adequately discuss the applicability of the proposed solution to the challenge posed by the RFA and how the research will enhance the supply chain of plant-based protein?
- Has the applicant demonstrated that this research has not been done elsewhere, or that this research accelerates the development of resources necessary to enhance the

supply chain for plant-based protein in a profitable and sustainable manner?

Impact and Outcome (25%)
- Did the applicant align the proposed project with the objectives of the RFA?
- If the research project is successful, will it create new paradigms or challenge existing ones in the US and/or global food systems?
- Did the research team outline tangible outcomes of this project?
- Will the applicant train the next generation of food and agriculture research scientists, and if so, how?

Feasibility (30%)
- Are the aims and objectives of the proposed project outlined clearly?
- Are the methods outlined to achieve the project's aims feasible?
- Are the methods appropriate?
- Does the research team have the necessary personnel, qualifications, and effort levels to complete the proposed research?
- Are the timeline and budget appropriate for the proposed work?
- Did the applicant identify potential risks to successfully complete the research goals/objectives and propose to address them?
- Is the data and results management plan outlined by the applicant adequate?

Partnerships (15%)
- Did the applicant detail the partnerships and/or collaborators involved in the project?
- Did the applicant build a diverse team featuring industry, nonprofit, state or local partnerships?
- Are those partners integral to the proposed project?

Award Administration

Selection Notice
Following the full application review, the principal investigator and the authorized organization representative listed on the project will be officially notified by email whether (1) the application has been selected for funding pending award negotiations, or (2) the application has not been selected funding. If an application is selected for funding, the Foundation for Food and Agriculture Research reserves the right to request additional or clarifying information for any reason deemed necessary, including, but not limited to, matching funds, or other budget information. Potential grantees are free to accept or reject the Grant Agreement as offered.

Award Notice
FFAR notifies applicants of whether they are selected for funding through email. The notice does not constitute an award or obligate funding from FFAR until there is a fully executed Grant Agreement.

Grant Period(s)
Upon receipt of the Grant Agreement, the potential grantee should note the Start Date and the End Date. Grantees may only use FFAR funds on project expenditures on or after the Grant Agreement is fully executed, or with prior approval of pre-award expenditure. Charging expenditures to the grant prior to the fully executed date is strictly prohibited. Likewise, grantees may not use FFAR funds after the End Date except to satisfy obligations to pay allowable project costs committed on or before that date. Grantees may have up to the last day of the month of expiration to fulfill obligated expenses.

Once the Grant Agreement is fully executed, the Start Date cannot be changed. The End Date may be changed with a written approval of a no-cost extension request by FFAR. If a no-cost-extension request is approved, FFAR will issue an amendment to the Grant Agreement.

If the grantee requires additional time beyond the Grant Period and the established End Date to assure adequate completion of the original scope of work within the funds already made available, the grantee may request a one-time no-cost extension of up to 6 months. The request must be submitted to FFAR at least thirty (30) days prior to the End Date of the grant. The request must explain the need for the extension and include an estimate of the unobligated funds remaining and a plan for their use. This one-time extension will not be approved merely for using the unexpended funds.

Post-award Management
Reporting Requirements
After a grant is conferred, the grantee shall provide an annual financial report to FFAR showing grant expenditures to date. The grantee shall also provide an annual progress report to FFAR showing activities being carried out under the grant, including but not limited to project accomplishments to date and grant expenditures. Within 30 days of completion of all grant activities, the grantee shall provide a final progress report. The final progress report should address the original objectives of the project as identified in the application, describe any changes in objectives, describe the final project accomplishments, and include a final project accounting of all grant funds.

Scientific Integrity
FFAR's ability to pursue its mission to build unique partnerships to support innovative science addressing today's food and agriculture challenges depends on the integrity of the science on which it relies. A fundamental purpose of FFAR is to facilitate the advancement of knowledge and the application of the science to address challenges relevant to the FFAR's mission. All FFAR grants must be conducted with the highest standards of scientific integrity.

Grant Terms and Conditions
The Foundation for Food and Agriculture Research expects applicants to have reviewed the **COTF Grant Agreement** prior to applying to ensure that the applicants are aware of the applicable terms under which the grant is offered. FFAR will only entertain potential modifications to the Grant Agreement under the most exceptional circumstances. Successful applicants are strongly encouraged to sign the Grant Agreement as presented.

Contact Information
Technical Help Contact
Mon–Fri: 8AM EST – 8PM EST, **Weekends:** 10AM EST – 6PM EST
Phone support upon request Mon–Fri: 9AM EST – 7PM EST
Email: support@smapply.com

Grants Questions Contact
        Email: grants@foundationfar.org

We only accept scientific, programmatic and/or grants inquiries by email. We strive to respond to inquiries within two business days, but our response time depends on the volume of questions received and the complexity of the questions asked. Please note that we do not monitor this mailbox on evenings, weekends, or federal holidays.