REQUEST FOR PROPOSALS

GFI research grant program
Field Catalyst and Discovery Grants

April 2022

Proposals can be edited and submitted here
Review our FAQs here

PHASE 1 APPLICATIONS DUE: JUNE 3, 2022
PHASE 2 APPLICATIONS DUE: AUGUST 1, 2022
PHASE 2 APPLICATIONS ARE BY INVITATION ONLY

gfi Good Food Institute

Introduction

The Good Food Institute (GFI) is a global nonprofit building a sustainable, healthy, and just food system. Our scientists, entrepreneurs, lawyers, and policy experts are focused on using food innovation to answer the question: How can we feed the world's growing population with safe and healthy foods produced through systems that benefit people, animals, and the planet? We focus on accelerating research, development, and the path to competitive commercialization for a promising solution to this question – namely, the production of meat through animal-free methods.

GFI and its science & technology team specifically work to catalyze research and development to improve the organoleptic properties, price point, and production capacity of plant-based and cultivated meat products. To that end, GFI established the Research Grant Program in 2018, made possible by the generous donations of philanthropic supporters. This program supports essential research designed to solve many of the challenges facing these industries and seeks to create open-access tools and methods for the development of appetizing, affordable, and widely available alternative protein products.

For additional information on GFI and the alternative protein industries we support, please visit
gfi.org/essentials

For additional information on GFI's research funding and grant recipients, please visit
gfi.org/researchgrants

To provide feedback on this RFP or to clarify any of the information presented within, please contact GFI's grant management team at
research_grants@gfi.org

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Background

Cultivated meat, plant-based products, and fermentation offer exciting research opportunities with tremendous positive impacts for the climate and global health. In an emerging field like alternative proteins, research funding has an outsized catalytic effect, serving to generate preliminary data that stimulates follow-on investment from conventional funding mechanisms. With the support of several generous donors, GFI's Research Grant Program is advancing this foundational, open-access research and creating a thriving ecosystem around this game-changing field. Since launching in 2018, GFI's Research Grant Program has provided yearly opportunities for researchers to apply for rapidly-deployed funding.

Funding areas

This RFP seeks research proposals that address pressing scientific and technological challenges facing the alternative protein industry drawn from GFI's Advancing Solutions for Alternative Proteins (ASAP) initiative. Within this RFP, there are two funding mechanisms: Field Catalyst Grants and Discovery Grants. Field Catalyst Grants provide larger amounts of funding for projects that address targeted GFI funding priorities for that year. Discovery Grants provide a smaller amount of funding, but allow for more applicant flexibility in topic selection.

Field Catalyst Grant opportunities

Field Catalyst Grants are large-scale, targeted funding opportunities focused on high priority scientific and technological topics. These projects typically do not exceed 24 months and $250,000, although additional funding is available for projects that involve new collaborations. More information on the additional funding opportunity for collaborative projects can be found in the Award Information section of this RFP. We expect proposals submitted for consideration as Field Catalyst Grants will directly address the challenges identified in one or more of the funding priorities outlined below. Proposals that do not address these priorities will not be considered for Field Catalyst funding.

Field catalyst funding priority A / Biological processing methods for creating functional plant-based ingredients

Production platform: plant-based meat
Technology sector: ingredient optimization
For more information please see the following resources:

- Biological processing methods for isolating protein ingredients
- Plant-based meat: Anticipating 2030 production requirements

Previous GFI-funded research related to this topic:

- Impact of Fermentation and Phytase Treatment of Pea-Oat Protein Blend on Physicochemical, Sensory, and Nutritional Properties of Extruded Meat Analogs

Current challenge
Processing crops into flours, isolates, and concentrates often relies on chemical and mechanical methods. These methods may negatively impact the structure or function of the resulting ingredients, and some of these processes require energy-intensive steps, capital-intensive equipment, or undesirable chemicals. Gentler biological processing techniques may result in higher quality ingredients by imparting them with the functional, sensory, and nutritional characteristics desired for plant-based meat and seafood through biologically-mediated transformations involving enzymes or live microorganisms. However, widespread implementation of biological processing methods is still limited due to barriers such as cost (e.g., enzymes), complexity (e.g., fermentation), or simply a lack of research to demonstrate optimized processing parameters.

Proposed solution
We are soliciting proposals that develop and optimize biological processing methods for the creation of highly functional ingredients for plant-based meat and seafood. Sources of ingredients may be commodity or specialized crops or any domesticated plant. Methods to valorize existing co-product streams of commercial food and agriculture processing are of particular interest. Acceptable processing methods include enzymatic treatment, microbial fermentation, or combinations of methods that include at least one biological processing step. Processing innovations should lead to ingredients with improved characteristics specifically for plant-based meat or seafood applications.

We encourage proposals that will demonstrate feasibility of the processing innovations at pilot scale and include techno-economic analysis of the source material and processing methodology.

Successful proposals will clearly articulate:

- How improved functional, sensory, or nutritional characteristics of the final ingredient will be demonstrated;
- For which plant-based meat end product(s) their proposed processing method(s) will be the most useful;
- Whether the processing methodology developed is expected to be useable for a variety of source materials beyond the one(s) tested in the proposed research;
- What the biggest challenge in scaling the methodology is predicted to be;

- How implementation of the processing methodology at commercial scale is anticipated to impact the cost of ingredient production; and
- How the results of the research—including the details of the processing methodology itself—will be shared with academics and industry.

Field catalyst funding priority B / Animal-free, non-recombinant albumin and transferrin for cultivated meat

Production platform: cultivated meat
Technology sector: cell culture media
For more information please see the following resources:

- Animal-free, non-recombinant albumin and transferrin for cultivated meat
- The costs and environmental impacts of cultivated meat
- Cultivated meat media and growth factor trends

Current challenge
Cell culture media represents the majority of current cultivated meat production costs. The greatest contributors to these costs are the recombinant proteins and growth factors that are added to the media to assist cell growth and differentiation and to substitute the function of animal serum. While cultivated meat manufacturers have made significant progress in reducing costs and developing medium formulations for various cell types and cultivated species, pricing and large-scale availability of species-specific and food-grade versions of cell culture media components remains a challenge.

Proposed solution
We are soliciting proposals to develop low-cost functional substitutes for albumin or transferrin in animal cell culture using methods that can be scaled to volumes suitable for commercial cultivated meat production. Projects can be conducted at lab scale, but proposals must provide an estimate of how much albumin or transferrin they anticipate will be able to be produced annually using their methodology at scale. Proposals should include a description of how the albumin or transferrin substitutes will be identified, sourced, and tested for efficacy in agriculturally-relevant (meat or seafood) animal cell cultures.

We will not accept proposals focused on recombinant production of albumin or transferrin. We estimate that for cultivated meat to achieve even a fraction of 1% of global market share, demand for albumin could be between 4 million and 100 million kilograms per year and transferrin could be between 100,000 to 2.6 million kilograms per year. For albumin, this is over an order of magnitude larger than the current global production of recombinant amylase enzyme, which is widely used and produced at commercial scale. By identifying non-recombinant replacements for albumin and transferrin, recombinant protein production capacity can be redirected to the production of higher-value growth factors that mediate more specialized cellular signaling processes, for which demand is expected to be up to 100,000 times less.

We strongly encourage proposals that will include techno-economic analysis of the source material and processing methodology to provide estimates of the potential annual amount and cost of producing the albumin or transferrin substitutes.

Successful proposals will clearly articulate:

- What functional properties the proposed albumin or transferrin substitutes are expected to replicate and with what degree of fidelity, relative to serum-derived albumin or transferrin;
- How this functionality will be quantitatively assessed;
- Why the albumin or transferrin substitutes are expected to be economically viable at commercial scale;
- How the albumin or transferrin substitutes can be scaled to commercially relevant production volumes; and
- What species of animal cells the substitutes will be tested on.

Field catalyst funding priority C / Creation of flavor components for alternative seafood

Production platform: plant-based , fermentation-derived, or cultivated seafood
Technology sector: Ingredient optimization and end product formulation
For more information please see the following resources:

- Flavor and lipid chemistry of seafoods
- The role of enzymes in determining seafood color, flavor, and texture
- GFI's PISCES database contains additional information on published literature measuring volatile compounds in conventional seafood (see tab labeled "Volatile Profiles").

Current challenge
Seafood products exhibit a wide range of distinct flavor profiles, with different species of fish and shellfish varying substantially in flavor and aroma. Plant-based, fermentation-derived, and cultivated seafood products need to mimic the flavors of animal-based seafood while avoiding off-flavors or over-powering "fishy" tastes. There is some literature (like the papers linked above) detailing the molecules present in seafood that contribute to desirable and undesirable flavors. However, it is still challenging for alternative seafood manufacturers to perfectly replicate the nuances of these flavors.

Proposed solution
We are soliciting proposals that will improve our understanding of how multiple volatile molecules interact to create seafood flavor and will optimize flavor ingredients to improve the flavor of plant-based, fermentation-derived, and cultivated seafood. Proposals should go beyond simply measuring volatile compounds in conventional seafood products and should directly investigate the relationship between specific volatiles and sensory experience. Sources of flavor ingredients may include plants, microbial cells, or animal cells, but methods for producing these flavors should be able to be easily scaled and capable of achieving relatively low cost. In addition to considering the cost and potential scale of the flavor production

method, proposals should address storage and stability of the flavor ingredient(s). We will consider proposals from investigators who plan to protect intellectual property related to their specific ingredient (e.g., with regard to the production process), but data on the relationship between specific molecules and the sensory experiences they evoke should be made open source.

Successful proposals will clearly articulate:

- The type(s) of seafood the flavor ingredient is being created for;
- A plan for how the results of the research will lead to future success of the alternative seafood industry, ideally including plans for incorporating the flavor into a prototype product;
- Quantitative assessment of the degree to which the flavor profile of the flavor ingredient(s)—and prototype product(s), if applicable—matches that of the conventional seafood product(s) being emulated;
- Consideration of factors such as oxidative stability and heat stability that may impact the ability to use the flavor ingredient(s) in particular downstream processes, formulations, or product applications;
- How the sourcing/production of the proposed flavor ingredient(s) can be scaled to commercially relevant volumes; and
- Why the proposed flavor ingredient(s) are expected to be economically viable at commercial scale.

Discovery Grant opportunities

If you have a project idea that addresses technical bottlenecks in improving sensory characteristics, price points, or production capacity of plant-based, fermentation-derived, or cultivated meat but does not align with the Field Catalyst priorities listed above, you may apply for a Discovery Grant. Discovery Grant funding opportunities are designed for proposals that need a small amount of funding at the proof-of-concept level, which could potentially lead to big breakthroughs in the science behind alternative proteins. These projects typically do not exceed 12 months and $100,000. Projects may focus on a specific end-use application or the development of novel ingredients, methods, tools, and/or technologies. We encourage Discovery Grant proposals to focus on one of the research concepts identified by GFI's Advancing Solutions for Alternative Proteins (ASAP) Initiative. If your project idea does not address any of the challenges listed in the ASAP project, please make sure you clearly justify in your application why your project is important and how specifically it will address scientific or technical challenges facing the alternative protein industry. We expect that proposals submitted for consideration as Discovery Grants will be timely and fill an urgent need in the alternative protein industry.

Eligibility information

Applications submitted from any sector (academia, government, industry, nonprofits, etc.) and from around the world will be considered. Based on GFI's foundational mission to support the entire plant-based, fermentation-derived, and cultivated meat industries, the purpose of this

program is to support research that will be made available and accessible to benefit the industries and global society as a whole. Grantees shall make any data and results arising out of the work performed in connection with the project available to the public via a public webpage, presentation, or publication in an open-access peer-reviewed journal. Exceptions to this standard approach will be limited and accepted only in special cases where alternative terms are negotiated and agreed upon by GFI and the applicant in writing prior to the release of any grant funds. Specific terms related to confidential information and intellectual property will be negotiated during the execution of the research agreement prior to the disbursement of any grant funds.

See our frequently asked questions for more details on intellectual property rights and other contract terms. While the creation of intellectual property is not prohibited, GFI reserves the right to withdraw acceptance of a proposal if the potential grantee insists on intellectual property rights in the research that are not acceptable to GFI.

GFI strongly encourages women, racial and ethnic minorities, and other individuals who are under-represented in the alternative protein industry to apply for funding through this RFP.

Graduate students or postdoctoral researchers may serve as the lead investigator on a project proposal. In this case, GFI may ask for a brief letter of support signed by a faculty member at the student or postdoc's higher education institution. The letter of support should state the faculty member's commitment to serve as a project collaborator and advisor and to allow the proposed research to be carried out in their laboratory.

Lead researchers from projects that have previously been awarded a grant from GFI are eligible to apply to this RFP. Proposals from labs that are currently receiving GFI grant funding are allowed if the lead researcher of the new submission is different from the lead researcher of the previously funded project. GFI strongly encourages proposals from scientists who are new to the alternative protein field or who have not received GFI funding in the past.

Award information

Field Catalyst Grant proposals should include research goals that can be achieved in twenty-four months or less from the funding start date. Total budgets (including indirect costs) should be less than or equal to $250,000. Applicants may request an additional $100,000 for partnering with outside researchers (who have not received GFI funding prior) and/or industry stakeholders. In order to receive these additional funds, the team must demonstrate meaningful involvement from these partners in the proposal. Additionally, the partners must not be from the same department as the applicant. Other departments at the same university are acceptable, so long as they do not have a pre-existing charter to collaborate with the applicant. The intent of this additional funding is to encourage collaboration and bring new researchers, perspectives, and ideas into the field. Total budgets (including indirect costs) for applicants partnering with such researchers and/or industry stakeholders should not exceed $350,000.

Discovery Grant proposals should include research goals that can be achieved in twelve months or less from the funding start date. Total budgets (including indirect costs) should be less than or equal to $100,000.

For Field Catalyst Grants and Discovery Grants, indirect costs can be no more than 10% of the requested direct costs for projects submitted by researchers at academic institutions, government labs, and nonprofit organizations. No indirect costs may be included in project budgets from researchers at for-profit companies.

Applicants who want to propose a project requiring an extended timeframe or increased budget outside of the guidelines provided above must contact GFI's grant management team at research_grants@gfi.org *before* submitting their proposal to discuss the need for additional time or funding. GFI will then decide whether or not to allow an exception and will inform the applicant in writing of the decision.

How to apply for a Field Catalyst or Discovery Grant

The application process involves two steps. Phase 1 applications can be completed by any eligible applicant and are due June 3. Phase 2 applications are by invitation only. All Phase 1 applicants will receive notification from GFI by July 1 to let them know whether or not they have been invited to participate in Phase 2. Invitation to submit a Phase 2 application is not a guarantee of funding.

To apply for funding for a Field Catalyst or Discovery Grant, please follow these steps:

1. Proposals can be created and submitted through our application portal here. Please note, you will need to set up a user profile in order to access the application form and apply for GFI funding.

   Alongside your research proposal, you may choose to submit optional Letters of Support. These Letters of Support can be from either industry or academia, but should focus on your unique ability to deliver on the specific objectives outlined in your research proposal and how your research will impact the research or company of the letter writer. If you choose to submit Letters of Support, please include no more than two, and save them as one single PDF using the following naming convention: GFI-RGP-LoS-PIFamilyName-Date(mm/yyyy).pdf

Field Catalyst Grant and Discovery Grant applications are accepted until the **June 3, 2022** deadline listed on the front page of this RFP and are reviewed following that deadline. We will not accept proposals after the deadline for any reason. Specific instructions for completing a Phase 2 application will be provided to successful Phase 1 applicants at the time they are invited to participate in Phase 2. In general, the Phase 2 application will require additional

detail related to the research methods, the project timeline and deliverables, the roles and responsibilities of project team members, and the budget.

Review process and evaluation criteria

All submitted proposals will undergo a scientific review to determine their feasibility and suitability for GFI funding. The review committee consists of GFI scientists and external experts from academia and industry.

Proposals are evaluated using the following criteria:

- **Scientific alignment**
  Anticipated likelihood of addressing one of the research priorities specified in this RFP or articulating the technical problem being addressed and why it is important.

- **Expected impact**
  Anticipated likelihood of positive impact on the sensory characteristics, price points, or production capacity of plant-based, fermentation-derived, or cultivated meat.

- **Contribution to the scientific community**
  Plan for sharing project protocols, data, results, and/or research tools and materials with the larger scientific community and alternative protein industry.

- **Project planning**
  Feasibility of project goals (including realistic timeline and budget as well as clarity, soundness, and logic of research plan) and suitability of project team to successfully carry out project goals.

- **Commercial relevance**
  Ability to outline a path for research outcomes to meaningfully advance the alternative protein industry. This includes the potential commercial applicability of research and relevance to the plant-based, fermentation, or cultivated meat industries.

We recognize that our requirement for proposals to be written in English means that many researchers may be writing in a non-native language. This will be taken into consideration when we are evaluating the proposals, and we will not penalize researchers who may be writing in a second or third language.

GFI reserves the right to negotiate with project leaders regarding any of the content within their proposal including project aims and scope, budget, and timeline prior to making any final funding decisions. All decisions made related to funding, project duration extensions, and budget increases shall be made at the GFI review committee's sole discretion and may not be appealed.

For more detailed information about our proposal review process, please refer to our frequently asked questions.

Award administration

Prior to disbursement of any funding, the lead researcher, faculty advisor (if lead researcher is a graduate student or postdoc), and university official (if required) must sign an award agreement with GFI to ensure that both parties are in agreement regarding the terms of the grant award. The award agreement will detail the award specifics as well as the requirements for award recipients (see below). Please find our standard award agreement here. Upon notice of the funding decision, grantees will have a strict 120-day window to negotiate and execute their award agreement.

The entire project budget will be disbursed within three weeks from receipt of the signed award agreement.

Proposals that are accepted by GFI and that result in the granting of funds will have the following information made public: the project title; project summary; project team members' names, titles, and affiliations; and other information deemed relevant by GFI, such as a description of the proposed project scope, purpose, and grant amount. Information within a proposal that applicants wish to remain confidential must be clearly marked as confidential, privileged, or proprietary within the proposal. GFI will hold this information in confidence to the extent permitted by U.S. law, but reserves the right to require removal of such confidentiality requirements as part of accepting the proposal and awarding funds if the proposal is otherwise accepted. For proposals that do not receive funding, GFI will release no details about the researchers involved or the content within the proposals. We may release anonymized aggregated statistics regarding the number of proposals received, the types of institutions they came from (i.e., public vs. private), and the countries of the researchers' institutions, but no identifying information will be included in these statistics. Applicants have the right to withdraw applications at any time by sending a request indicating their desire to do so to research_grants@gfi.org.

Requirements for award recipients

Expectations of and specific requirements for award recipients will be explained in the award agreement that must be signed by authorized officials from both GFI and the grantee's organization prior to receipt of any funding.

The basic requirements include but are not limited to:

- Regular communication with GFI's Science and Technology team throughout the duration of the project to ensure consistent progress.
- Disseminating the project results in a publicly accessible manner.

- Consent to be featured on GFI's website, blog, and social media with a short description of your project goal(s).
- A brief written update to GFI about every 3 months to provide brief information regarding project progress, results, and any technical challenges that have arisen.
- A brief written summary outlining the project outcomes, potential next steps, and final expense report for how funds were utilized must be submitted within 30 days of the conclusion of the project. This summary should also include instructions for accessing data or obtaining research materials generated from the project.

Thank you for your interest in the GFI Research Grant Program

Please email any questions related to the program or this RFP to research_grants@gfi.org

Additional program information can be found at gfi.org/researchgrants