

## Layer Hen Keel Bone Health Request for Applications

**No Matching Funds Required for This Funding Opportunity**

### Key Dates

Pre-Application LOI (Letter of Intent) Open: May 4, 2022, at 12:00pm ET

Pre-Application Due: June 8, 2022, by 5:00pm ET

***An approved LOI with an invitation to submit a full application is required for submission.***

Full Application Invitation: June 22, 2022

Full Application Receipt Open: June 22, 2022, at 12:00 PM ET

Full Application Due: August 3, 2022, by 5:00 PM ET

Award Notification: Fall 2022

Anticipated Projects Start Date: Early 2023

The Layer Hen Keel Bone Health Research Program is a new collaborative program of the Foundation for Food & Agriculture Research ([FFAR](#)) and [Open Philanthropy](#) that will support research to improve welfare in commercial laying hens. Food animal welfare is an important ethical consideration for today's society and for the agriculture sector, which recognizes that good welfare is an essential component of healthy and productive farms. This Program will bring together public and private sector scientists to better understand animal physiology, housing design, economic trade-offs, and other issues, and create positive changes in layer hen welfare.

### BACKGROUND

The keel bone, or breastbone, of laying hens is frequently damaged during the laying lifespan – causing pain and reducing carcass value at the end of life. Keel bone damage (KBD) is observed as deviations or fractures of the breastbone that can affect significant numbers of hens on a farm, and although KBD prevalence is not typically determined in commercial settings, it is generally accepted that rates range between 10-70% but can vary widely between operations. KBD is a multifactorial problem that has been attributed to a combination of housing design, genetics, behavior, rearing practices, feed and nutrition, and other factors. In 2017, FFAR and Open Philanthropy held an open call for projects to address KBD in cage-free laying hens. The funded projects have conducted research related to housing design, gastrointestinal microbiome and the development of portable radiographic tools to assess bone health in live birds. While these projects have made significant advances, additional investment is needed to significantly reduce the incidence of KBD in commercial systems. Further, FFAR and Open Philanthropy believe that significantly reducing KBD in commercial settings will require a larger, cross-disciplinary approach in which scientists and economists work with egg farmers, breeding companies, equipment

manufacturers and other stakeholders to develop interventions and measure progress on this issue.

## PROGRAM DESCRIPTION

The primary objective of the Keel Bone Damage (KBD) Research Program is to form global, cross-disciplinary teams that will use evidence-based approaches to measurably reduce the incidence of KBD in laying hens.

The RFA will support research that investigates the multi-factorial causes of keel bone fractures and develops interventions having the potential to mitigate the occurrence of KBD. The awards will be made to groups of scientists that include participation by industry, i.e. egg producers, genetics companies, equipment manufacturers and other allied industries. Research related to animal physiology, husbandry, rearing practices, genetics, equipment and housing systems is encouraged. The research team must clearly define how they will achieve measurable reductions in KBD incidence, including timeline, milestones and plans for dissemination and implementation by industry.

The following research topic areas are provided as guidance to applicants; the final components of the research program should be comprehensive, interconnected and coordinated seamlessly to make significant contributions to addressing this challenge:

- Rearing practices. Research should address the impact of differing management practices on fracture incidence, egg production and performance throughout hens' lives, and include economic cost/benefit analyses that evaluate the trade-offs for producers and others who might invest money, time and effort in reducing KBD incidence.
- Genetics. Research should inform the ability to breed for hens that have lower incidence of KBD, associated with more optimal physiological/metabolic or behavioral outcomes. Research may include high-throughput phenotyping approaches that could contribute to the ability of breeding companies to track information from single hens within a large flock or system.
- Nutrition, feed and physiology. Research on nutrition, metabolism, feed fortification and formulation strategies that could reduce KBD.
- Early detection and/or prediction of KBD in commercial settings. Research could include the use of biomarkers, proxies, technologies, or other approaches for predicting KBD incidence.
- Economic analyses. Analyses could evaluate trade-offs such as time, effort, equipment, etc. that would be invested and/or recouped by producers, breeding companies and allied industry by implementing potential solutions. Development of decision tools for producers to understand and mitigate the risk of KBD under different scenarios.
- Definition and/or impact metrics. Efforts to define and measure the impact of the research and education activities, across the span of the project.

### Research Topics Not Supported Under this Call:

- Pain sensation or mitigation.
- Development of welfare audit protocols, processes or systems.



- Individual behavioral monitoring without components that could significantly contribute to reducing the incidence of KBD.

All research must be conducted in accordance with standard research compliance requirements, such as approval from the relevant Institutional Animal Care and Use Committee (IACUC) or similar for international institutions. If human subjects are involved, the research team should be trained in culturally appropriate methods to reach the target population and must have approval from Institutional Review Board (IRB), or similar review boards.

### **Additional Guidance to Applicants:**

The awards made under this funding opportunity should be considered as a “Program Grant,” which may be more complex in scope and budget than individual research grants. A “Program Grant” is for a group of researchers and industry experts who wish to collaborate by pooling their expertise and resources and should include synergistic research projects designed to achieve results not attainable by researchers or industry working independently. The grants will be made to a single lead institution, with funds flowing to other institutions via subaward. The lead institution will be responsible for managing the overall grant, including sub-awards, and ensuring timelines, milestones and deliverables are met. Evaluation of proposals will be based on the merit and complementarity of individual research projects, the expertise of individuals within the group, collaboration with industry stakeholders and the plan for achieving measurable reductions in KBD incidence. Detailed evaluation criteria are below. The projects should represent new research, distinct from other efforts, with involvement by multiple researchers across institutions. International collaborations are welcome; research should be relevant to US and international production systems.

Collaboration with industry is *strongly* encouraged. It is anticipated that significant effort will be dedicated to outreach to industry stakeholders and dissemination of results; these components should be accounted for within the overall budget. A clearly defined outreach plan with specific objectives for disseminating research results to the scientific community as well as to producers and allied industry is expected.

### **ELIGIBILITY**

FFAR welcomes applications from all domestic and international higher education institutions, non-profit and for-profit organizations, and government-affiliated research agencies.

Any individual(s) with the skills, knowledge, and resources necessary to perform the proposed research as Program Director(s)/Principal Investigator(s) may apply through their home institution or organization.

### **AWARD INFORMATION**

FFAR and Open Philanthropy anticipate awarding 2-3 grants of approximately US \$2-3 million each (US \$6M available Program total) under this funding opportunity. **Matching funds are not required for eligibility.** Applicants may request up to US \$3M total for each grant. Requests should be reasonable and commensurate with the time, scope and deliverables outlined in the application. Budgets that are not commensurate with proposed work or that are poorly justified will negatively affect the overall evaluation of the application.

Projects of up to 60 months in duration will be considered. FFAR reserves the right to request modifications to the workplan, methodology and scope of proposed work that may affect the final award amount.



Key budget considerations are noted below. Applicants are encouraged to contact [FFAR's Grant Team](#) to discuss any concerns.

Indirect Costs:

- 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; instead, it is an overall allotment from the Total Funds Request, also known as the Total Project Costs. This requirement means 90% of the total funds requested must go directly to the proposed research.

## SUBMISSION REQUIREMENTS

### Letter of Intent (LOI)

Applicants must submit the LOI using FFAR'S Grant Management System. All information provided will be treated as confidential. The most innovative and cutting-edge projects with significant potential for advancing FFAR's mission will be invited to submit a full application. **Applicants must submit an LOI to be invited to submit a full application.**

#### Required Components

- Project title (up to 250 characters)
- Program Director or Principal Investigator (name, affiliation, contact information)
- Key project personnel – name(s), affiliation, expertise, project role
- Project description
  - How will the project address the stated challenge and advance understanding of an understudied research topic or information gap? (up to 250 words)
  - What innovative outcomes will the project generate? Describe how the project will measurably reduce the incidence of keel bone fractures or improve layer hen keel bone health. (up to 250 words)
  - Why is the research team and allied partners ideally positioned to address this challenge? (up to 250 words)
- Project timeline
  - Proposed project start date
  - Proposed project duration (in calendar months)
- Budget
  - Total funding request
  - Total existing matching contributions, if applicable

### Full Application Components

**Only applicants with an approved LOI will be provided with an invitation to submit a full application.**

#### Required Components

- Project title (up to 250 characters)
  - Program Director or Principal Investigator (name, affiliation, contact information)
  - Key project personnel – name(s), affiliation, expertise, project role
  - Geographic location (city, state, congressional district) of the applicant organization.



- Geographic location (city, state, congressional district) where the proposed research will be conducted.
- Project abstract (up to 250 words)
- Why is FFAR ideally positioned to fund this project? (up to 250 words)
- Goals and objectives (up to 250 words)
- Project description and approach (up to 2500 words)
- Anticipated outcomes or outputs (up to 500 words)
- Data management plan (up to 250 words) (Note: please see FFAR's [data management policies](#))
- Barriers to adoption of the research outcome(s) (Note: FFAR strongly encourages applicants to address social and economic factors in the project design, evaluation processes, and outcomes, where applicable.) (up to 250 words)
- Organization Assurances (if applicable)
- Proposed budget (up to \$3,000,000; FFAR limits indirect costs to 10% of total award)
  - Total proposed budget
  - Amount requested from FFAR
  - Amount and source(s) of matching contributions, if applicable
  - Budget justification: Provide a brief overview of the budget by task or objective, in parallel to the approach outlined in the project's description. Address costs related to personnel, equipment, and facilities, and analytics. (up to 500 words)
- Current and Pending Support Form: complete for everyone listed as P.I. or Key personnel on the project

## Required Attachments

Failure to provide these attachments will result in the application's disqualification.

- Figures, graphics, equations, and tables. (*Captions may be up to 500 words total*)
- References Cited
- [Budget Form](#)
- [P.I. and Key Personnel Biosketch](#): five-page limit per individual listed as P.I. or key personnel in the project
- Project timeline (by year)
- Three-slide summary or description of the project
- Matching Fund Verification Letter(s), if applicable.

## HOW TO APPLY

LOIs and invited full proposals must be submitted by the deadline date through FFAR's online application Grant Management System. Applications submitted outside of this System will not be considered.

To start a **new** application, please click [here](#). If you are a new user, register for an account by clicking "Create Account" button located under the email address field on the left side of the home page. Once you log in, you may begin working on your application. Please be sure to save your work often by clicking on "Save and Finish Later." To access a saved application, please do so through your [Grant Management Account](#).

Only LOIs and invited full proposals submitted by the deadline through FFAR's Grant Management System will be accepted and considered eligible for evaluation. To be fair to all applicants, FFAR will not grant extensions to applicants who missed the deadlines posted in the Key Dates section.

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## ADDITIONAL INFORMATION

### Review Process

*Pre-Application Review:* Submitted pre-applications undergo an internal review by the Layer Hen Keel Bone Health (KBH) Steering Committee to assess if the project is relevant to the RFA and that the application demonstrates the potential to meet the evaluation criteria. Those proposals deemed to have significant potential for advancing the KBH's objective will be invited to submit a full application. ***Applicants must submit a pre-application to be eligible to submit a full application.***

*Full Application Review:* Full proposals undergo a peer-review process. First, each submission is assigned to external review by at least three subject matter experts. In the second stage, the KBH Steering Committee will provide funding recommendations based on the external peer reviews and a comparative evaluation of how well submissions meet the RFA's objectives. The KBH Steering Committee will make funding recommendations to FFAR and Open Philanthropy, who will make final selection decisions.

All external reviewers must agree and adhere to the terms outlined in 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, institution, or project personnel. Reviewers with a conflict of interest are recused from evaluating or participating in the related discussions. Each stage of the review is conducted confidentially, and as such, FFAR is responsible for protecting the confidentiality of the contents of the applications.

### Evaluation Criteria

All proposals will be screened for relevance, accuracy, completeness, and compliance with the guidelines stated in this RFA. Pre-proposal applications must demonstrate the potential to meet the evaluation criteria. Full proposals will be evaluated on the following criteria:

#### ***Novelty, Innovation, and Originality (10%)***

- Does the proposed project address the issue of KBD in a new or novel way that promises to “move the needle” on this global challenge?

#### ***Technical Merit and Feasibility (20%)***

- Does the proposal clearly outline the aims and objectives?
- Does the proposal include appropriately thorough, tractable, and feasible methods?
- Has the principal investigator assembled a qualified research team with access to the appropriate field and laboratory facilities?
- Does the proposal present a tractable timeline and budget?
- Does the proposal include adequate risk evaluation and a mitigation plan?
- Does the proposal include an adequate data management plan with a commitment to public access?

#### ***Impacts and Outcomes (35%)***



- Does the project have substantial potential to significantly reduce KBD in commercial settings?
- Does the proposal emphasize scalability of results and present a plan for disseminating the project outcomes?
- Do the approaches have a clear path to implementation in commercial settings (e.g. via an industry collaboration)

### ***Partnerships (35%)***

- Does the proposal include a description of partnership(s)?
- Will the partnerships improve the study design, methodology, conduct and/or analysis and increase the likelihood of successful completion of the research?
- Will the partnerships increase the likelihood for commercial implementation and positive “real world” impact?

## **Award Administration**

*Selection Notice:* Following the full application review process, the principal investigator and the authorized organization representative listed on the project will be officially notified by email of the status of the application. If an application is selected for funding, FFAR reserves the right to request additional or clarifying information for any reason deemed necessary. Potential grantees are free to accept or reject the Grant Agreement as offered.

*Intent to Fund Notification:* FFAR notifies applicants of their awards by email. The notice does not constitute an award or obligate funding from FFAR until there is a fully executed Grant Agreement. FFAR encourages applicants to review a sample Grant Agreement before applying to ensure they know the terms under which grants are offered.

*Grant Terms and Conditions:* FFAR expects applicants to have reviewed the [Sample Grant Agreement](#) before applying to ensure that the applicants are aware of the applicable terms under which the grant is offered. Successful applicants are strongly encouraged to sign the Grant Agreement as presented.

A grantee may request a no-cost extension of up to 12 months to complete the work's planned scope. The request must be communicated to FFAR and submitted through the FFAR Grant Management System at least thirty (30) days before the end date of the grant. The request must justify the need for the extension, include a summary of the unobligated, remaining funds, and provide a plan for fulfilling the project's terms. If a no-cost extension request is approved, FFAR will issue an amendment to the Grant Agreement. This extension will not be approved merely for using unexpended funds.

*Requirement to Demonstrate Matching Funds :* Matching funds are OPTIONAL for this program. If the applicant provides matching funds, the applicant agrees to identify and certify matching funds annually before disbursement of award funds. The match share is intended to supplement, not supplant existing funding for the principal investigator (PI). The applicant will abide by FFAR's [Matching Funds Guidelines](#) to meet FFAR's matching requirements. To constitute a valid match, all matching funds on a FFAR grant must be expended during the grant period.

## **Post-award Management**

*Annual Reporting Requirements:* After FFAR confers a grant, the grantee must provide semi- annual



update presentations to the KBH Steering committee, as well as annual scientific and financial progress reports. The annual reports should include activities performed under the grant, highlighting project accomplishments, and an account of all expenditures to date.

*Final Report Requirements:* Within 90 days of completing the project, the grantee shall provide a final project report. This report should address the project objectives outlined in the original grant application, describe any modifications to the project objectives and scope, describe the final project accomplishments, and include a final project accounting of all grant funds. All results gained in a project should be made publicly available through publications and appropriate data-sharing mechanisms, including publication by the Research Institutions participating in any project. Ownership in any patent applications made under the project will be determined in accordance with the rules regarding inventorship under United States patent law such that the ownership will vest with the applicable assignee that is entitled to ownership of each inventor's interest consistent with the intellectual property assignment agreement between the assignee and such inventor, which may be included in an employment agreement or another form of agreement between the inventor or the assignee.

*Scientific Integrity:* FFAR strives to advance knowledge and the application of science to address challenges related to sustainable agriculture. FFAR's ability to pursue its objective depends on the integrity of the funded science projects. All projects must be conducted with the highest standards of scientific integrity.

## CONTACT INFORMATION

For questions related to the online submission system, please contact FFAR's Grant Management team at [grants@foundationfar.org](mailto:grants@foundationfar.org).

For questions related to the Layer Hen Keel Bone Health Program, please email ([tkurt@foundationfar.org](mailto:tkurt@foundationfar.org)). We only accept scientific or programmatic and grants inquiries by email.

FFAR strives 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 mailboxes on evenings, weekends, or federal holidays.