

Harvest for Health Breakthrough Crop Challenge

SUBMISSION CRITERIA

Key Timelines

Seed Funding Announcement: Spring 2023

Challenge Submission Criteria Launch: August 1, 2023

Challenge Applications Submission Open: June 12, 2024

Challenge Application Submission Due August 7, 2024

Step 1 Panel Review: Fall 2024

Step 1 Review Notification: Winter 2025

Step 2 Submission: Winter 2025

Step 2.1 Panel Review: Summer 2025

Step 2.1 Review Notification: Fall 2025

Step 2.2 Experimental Lab Testing Review: Spring 2026

Challenge Award Winner Announcement: Fall 2026

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Background

Pioneered by the [Foundation for Food & Agriculture Research](#) (FFAR) and the [Global Alliance for Improved Nutrition](#) (GAIN), the Harvest for Health Challenge aims to accelerate the development of underutilized crops and to increase the diversity of nutritious foods in the marketplace. There are over 50,000 edible plant species in the world, yet only three crops comprise 60% of our global diet. Many plant species contain a vast array of nutritional, agroecological, and genetic traits that can contribute to food and nutrition security, improve biodiversity and serve as sources for novel food and food ingredients. Moreover, consumer demand is growing for more sustainable products made from natural alternatives rather than synthetic food additives. As many food ingredients are derived from plant-based sources, the 50,000+ edible plant species that exist in the world present a tremendous opportunity to identify new foods and food ingredients. Prioritizing the development of underutilized crops with the potential to succeed in today's market will be of utmost importance to ensure that we capture the rich diversity of edible plants for both human and planetary health. The Harvest for Health Challenge is interested in identifying promising underutilized crops that can be used as new sources of nutritious, functional and sustainable food ingredients.

"Underutilized crops are mostly wild or semi-domesticated species adapted to local environments. These crops were used as traditional foods for centuries but became increasingly neglected in farming systems. Agricultural modernization, widespread monoculture, and the promotion of high-yielding varieties have marginalized these crops." (Li et al., 2020)

"Underutilized crops can also be defined by their limited geographic distribution or use, and the absence of their broader adoption or support from policymakers, technology providers, donors, breeders, and extension services." (Khan et al., 2022)

The public sector alone cannot invest, develop and integrate these new crops into the food system. It will require investment from both the public and private sectors. Little is known about how underutilized crops could be used in the food industry and, thus, pose a significant economic risk to the private sector. To attract more private sector investment in underutilized crops, Harvest for Health aims to take an innovative approach by investing in a predictive model that can help identify promising underutilized crops with characteristics

that the food industry finds attractive and that consumers find desirable. Harvest for Health Challenge consists of two phases:

- **Phase I: Breakthrough Crop Challenge (Challenge)**— Focuses on building a predictive model to identify underutilized crops with properties of interest to food and ingredient companies.
- **Phase II: Commercial Development of Select Crops** — Focuses on using the developed predictive model to prioritize underutilized crops for commercial development based on their potential for increased public and private investments. The Predictive Model Development and Validation winner will be involved with FFAR in the utilization of the predictive model in Phase II of the program, to prioritize underutilized crops for commercial development based on their potential for increased public and private investments.

This call will focus explicitly on Harvest for Health Phase I, the Breakthrough Crop Challenge.

Breakthrough Crop Challenge Description

This Challenge aims to de-risk future investment in underutilized crops by developing a predictive model that can screen thousands of crops to determine a crop’s potential as a source of ingredients with desirable functional properties. The predictive model must utilize genomic sequence data at the minimum and must use data that is currently publicly available or data that will be made publicly available at the time of submission of the model. For example, see [African Orphan Crops Consortium](#), [Bioversity International](#) and [The Periodic Table of Food Initiative](#), some of which already are or will be publicly available resources. Using information from public resources, in addition to knowledge of specific properties of ingredients, applicants must be able to predict which crops will be of interest to the food industry and supply information on the specific criteria used for the prediction, and demonstrate the use of the predictive model.

The purpose of the Breakthrough Crop Challenge is to develop a predictive model to determine a crop’s potential as a source of ingredients with the following functional properties:

- Thickeners, emulsifiers, and stabilizers
- Bulking agents
- Taste and flavor enhancers
- High nutrient density (specific nutrients to be proposed by applicants)

The Harvest for Health Phase I, Breakthrough Crop Challenge consists of two independent parts:

- Part 1: Seed Funding (Completed in early 2023). **FFAR awarded seed funds to three meritorious applications.** All recipients of the Seed Funding award must apply for the Predictive Model Development and Validation award.
- Part 2: Predictive Model Development and Validation (**Current call**): (US \$1 million*).

Eligibility

Any individual(s) with the skills, knowledge and resources necessary to carry out the Breakthrough Crop Challenge as Program Director(s)/Principal Investigator(s) may apply **through their home institution or organization.**

The Foundation for Food & Agriculture Research welcomes applications from all domestic and international higher education institutions, non-profit and for-profit organizations and U.S. government-affiliated research agencies.

Applicants will be required to agree to the Breakthrough Crop Challenge Terms and Conditions and to develop and submit a validated predictive model as outlined in the submission criteria section below. All applications will be reviewed by an expert review panel for eligibility to receive the US \$1.0 million award.

Applicants do not need to participate in Part 1: Seed Funding in order to participate in Part 2: Predictive Model Development and Validation to be eligible to receive US \$1.0 million*.

AS SET FORTH IN THE CHALLENGE TERMS AND CONDITIONS, AWARD OF THE US \$1.0 MILLION PRIZE IS SUBJECT TO EXECUTION OF A LICENSE AGREEMENT FOR COMMERCIAL USE OF THE WINNING SUBMISSION. IN ADDITION, FFAR AND GAIN RESERVE THE RIGHT TO NOT DECLARE A WINNER OR AWARD THE PRIZE IF NO PREDICTIVE MODEL MEETS THE SUBMISSION REQUIREMENTS.

Predictive Model Development & Validation Submission Criteria

The [Breakthrough Crop Challenge](#) is requesting a developed and validated predictive model to identify underutilized crops with market potential as a source of ingredients with one or more of the following functional properties:

- A. Thickeners, emulsifiers, and stabilizers
- B. Bulking agents
- C. Taste and flavor enhancers
- D. High nutrient density (specific nutrients to be proposed by applicants)

Note: If high nutrient density is selected as the property of interest, the applicant must select a second functional property to make the application more competitive.

Note: Before you begin your application please make sure you review and assess if you meet the conditions set under [Section IX: Predictive Model and Training Data Sets Rights](#).

Submission Materials

I. Contact Information

- a. Principal Investigator and project team name(s), affiliation, expertise and role on the project
- b. Office Address
- c. Geographic location

II. Project Title

III. Abstract/Project Summary (500 words max.)

IV. Targeted Functional Property(ies) (500 words max.)

- a. List the functional property(ies) selected
- b. Provide a clear description and justification for each selected functionality(ies) predicted:
 - Thickeners
 - Emulsifiers and stabilizers
 - Bulking agent
 - Taste and flavor enhancers

- High nutrient density

V. Predictive Model Development Approach (2000 words max.)

- Define the problem to be solved based on the selected functional property(ies): What will be predicted as the target by the predictive model? How will the prediction target be translated to the selected functional property(ies)?
- Explore existing background on what other approaches/predictive models have been developed to solve the same or similar problem, if any. What are the performance levels and limitations of these existing approaches?
- To predict the target functional property(ies), describe the datasets that are needed as the input (predictor variables), and what are the output (response variables). Describe the data selected, the source, and the justification for the data selection. Where does the data come from? What's the size of the data? Describe the data quality. **(Note: input data should be limited to one or a combination of the following: genomic sequencing, nutrition composition, and biochemical properties of crops).**
- Describe any additional steps taken to prepare the datasets to fulfill the requirement for the model development.
- Describe the architecture of the mode and the design. Include an architecture design visual of the predictive model to show how it works from taking input data to the predicted functional property(ies) output.
- Explain the rationale for choosing this approach? What hypothesis/assumption is it based on?
- In what form will the model be developed? What's the language used to develop the model?
- Explain the criteria/metrics used to choose the final model? What's the major advantage of this model? How does the model differ from existing approaches?
- What are the computational resources/power needed to run the model?
- Describe the output format, and how you would interpret the output.
- Explain what is required to run the model for predictions and provide instructions on running the predictive model.
- Explain the limitations/challenges/risks of the model.

VI. Predictive Model Assessment Approach (2000 words max.)

- Describe the detailed approach of training, optimizing, and testing the predictive model. Describe all procedures, including but not limited to any

feature selection and/or model optimization and calibration procedure used during model training.

- b. Describe how the data is structured in training, optimizing, and testing. What metrics are used for assessing the model's performance?
- c. Describe how overfitting is evaluated and avoided.
- d. Describe the criteria for measuring a successful model. How does the current model compare to existing approaches, if any? What's your confidence in the current model for predicting functional properties in crops? Include measurements for performance indicators such as accuracy, precision, recall, and F1-measure.

VII. List of Predicted Crops with the Potential for Functional Property(ies) (2000 words max.)

- a. Apply the predictive model to a publicly available input dataset that includes underutilized crops to make predictions of potential novel functional properties.
- b. Describe procedure used and associated outcomes.
- c. Provide a prioritized list of up to 20 underutilized crops that were predicted to have the potential for the selected functional property(ies) (bulking agents; thickeners, emulsifiers and stabilizers; taste and flavor enhancers; and high nutrient density [specify selected nutrients]).
- d. Provide justification for selected crops, including how the crops are prioritized based on the predicted functional property(ies) and the interpretation of confidence level from the predictive model.

VIII. Crop Functional Property(ies) Experimental Validation & Testing (2000 words max.)

- a. When the predictive model predicts a molecule to have a selected functional property(ies), describe how the predictions are tested and validated by experimental assays. If there is a standard validated protocol from [AOAC International](#) or any published source, please use that and cite it properly. If not, please provide the protocol, data, and documentation on validating your assay(s) by positive and negative controls/standards for the functional property(ies).
- b. In your validation include (at least one) known crop and (at least three) underutilized crops from the predicted list to show the scalability and generalizability of the predictive model. Provide documentation. (*A known crop in this context is a crop that is commercially used and may be considered the dominant source of a certain functional property in the food industry*).

- c. What are the assay results for the predicted functional properties?
- d. Describe how the predicted functional property(ies) compares to a control/standard ingredient currently used in the industry for the selected functional property(ies).

Provide details on sample preparation, as well as how ingredients will be isolated from the plant source for testing and related factors, including instruments used, conditions and parameters, and measurements taken (examples of measurements for different functional properties can be found on [AOAC International](#), [JECFA](#) (Joint Expert Committee on Food Additives) databases on [food additives](#), [flavorings](#), [Food Chemicals Codex](#), etc.) and how results will be interpreted. Explain how each of these factors will affect the result and provide documents on successfully conducting the assay.

IX. Predictive Model and Training Data Sets Rights (500 words max.)

- a. Indicate if the applicant developed the predictive model entirely on their own or if they used a preexisting third-party model as the basis for the predictive model. If a third-party model was used, please identify that model, and the third-party developer, and provide a copy of the license terms under which the applicant used the third-party model.
- b. Indicate if the applicant developed the training data used to train the model entirely on its own or if the applicant obtained the data from third parties. If third-party data was used, please identify the source of the data and provide a copy of the license terms under which the applicant used the third-party data?
- c. Indicate if the applicant will have sufficient rights to (and be willing to) grant a license that permits unrestricted modification, distribution and commercial use of the predictive model if selected as the winner of the Breakthrough Crop Challenge?
- d. Indicate if the applicant will have sufficient rights to (and will be willing to) (i) provide the training data for the model, and (ii) grant a license that permits unrestricted modification, distribution, and commercial use of the data if selected as the winner of the Breakthrough Crop Challenge.
- e. Indicate if the applicant will have sufficient rights to (and be willing to) provide a period of exclusivity with respect to FFAR, GAIN and their partners' use of the predictive model and data if selected as the winner of the Breakthrough Crop Challenge.

- f. Indicate if the applicant is willing to provide support and assistance to FFAR, GAIN and other users of the predictive model for a period of time if selected as the winner of the Breakthrough Crop Challenge.
- g. Indicate if the applicant will have sufficient rights to (and be willing to) make the predictive model and training data generally available to the public on open source or similarly permissive terms following a period of exclusivity if selected as the winner of the Breakthrough Crop Challenge.
- h. With respect to any of (a) – (g), if the applicant does not have sufficient rights, indicate if the applicant or FFAR/GAIN can acquire such rights from a third party.

X. Utility, Feasibility, and Cost (500 words max.)

- a. If available, provide information indicating products where selected functional properties can be more appropriately used/suitable (e.g., Ice creams and pastries). Provide justification to support the information provided above.
- b. Discuss how the identified functional property is affected under different processing conditions and products.
- c. Indicate what processing and technology will be needed to extract/isolate raw materials/ingredients (if applicable).

XI. Team Qualifications (250 Words)

- a. List the names of all team members, their expertise, and their role in the predictive model development and validation. The team should be multi-disciplinary including a computational/data science, food scientist, ingredient specialist, plant scientist, etc.

XII. Conclusion (250 words)

- a. Describe the conclusion of the approach and the developed model, does it successfully solve the problem as stated at the beginning? What are the major outcomes of the approach and predictive model?

XIII. Video Submission

- a. Provide a link to a 3–4-minute video presentation showcasing how the developed predictive model will be used in practice. If it is password-protected, please include the password in your supporting document, you can use any streaming video service such as YouTube, Vimeo, etc.

Submission Steps

Submission Step 1 (All Applicants)

Challenge Application Submission will open on June 12, 2024 with a due date of August 7, 2024. All applicants will submit background information and the [submission materials Sections I–XIII](#).

Submission Step 2 (Select Applicants)

Up to 10 applicants from Submission Step 1 will be invited to provide the predictive model, detailed instructions on running the predictive model as a one-line executable, with input and output data for assessment and validation, and results from experimental validation of functional properties in wet/experimental lab testing. Applicants will provide the training and testing input data used to make the predictions for reproducibility checks and the assay output and performance data. Up to five top applicants will move to the next stage of assessment where wet/experimental lab testing will occur. Selection criteria will be based on performance metrics, such as accuracy, precision, recall and F1-measure.

Review Process

FFAR will employ a jury of panelists to review the submitted model. This will be a 2-step review process:

Step 1 Review Process

All applicants will submit background information and the submission criteria section I – XIII. This will undergo peer review (see criteria below) and up to 10 applications will be selected for the second review step.

Review Criteria

A. Technical Merit & Approach (50%)

Predictive Model Development Approach

- a. Did the applicant adequately define the problem to be solved based on the selected functional property(ies) and did they include information on what will be predicted as targeted by the predictive model? Did the applicant adequately explain how the prediction target will be translated to the selected functional property(ies)? How plausible or accurate is the explanation?

- b. Did the applicant adequately provide information on the performance levels and limitations of existing approaches? Are the performance levels and limitations within acceptable range?
- c. Did the applicant adequately describe the input dataset used, output data, data size, quality, and justification for using selected data? Did the applicant appropriately use genomic sequencing, nutrition composition, biochemical property data, or a combination of these input data sources as specified in the submission criteria? Did the applicant describe the source of these data?
- d. Did the applicant adequately explain any additional steps taken to prepare the datasets to fulfill the requirement for the model development? How feasible is it to implement the additional steps?
- e. Did the applicant adequately describe the design and architecture of the model? Did they include an architecture design visual of the predictive model that adequately shows how it works from taking input data to the predicted functional property(ies) output?
- f. Did the applicant adequately describe the rationale for choosing the selected approach? Did they appropriately provide any hypothesis/assumptions and the criteria/metrics used to choose the final model?
- g. Did the applicant adequately indicate how this model differs from the existing approaches and also describe the limitations, challenges, and risks of the model?
- h. Did the applicant adequately describe the format and language used for model development?
- i. Did the applicant adequately describe the computational resources and power needed to run the model?
- j. Did the applicant adequately describe the output format, and how outputs will be interpreted?
- k. Did the applicant adequately describe the requirement for running the model to make predictions and provided instructions on running the predictive model?

Predictive Model Assessment Approach

- a. Did the applicant adequately provide a detailed description of their approach in training, optimizing and testing the predictive model? Did the applicant adequately describe all procedures including but not limited to any feature selection and/or model optimization/calibration procedure used during model training?
- b. Did the applicant adequately describe how the data is structured in training, optimizing and testing?

- c. Did the applicant adequately provide details on how overfitting is evaluated and avoided?
- d. Did the applicant adequately describe the metrics used for assessing the model's performance? Did the applicant adequately describe how success is measured and their confidence in the model's ability to predict novel functional properties in crops? Do the metrics values fall within acceptable range?

Predictive Model and Training Data Sets Rights

- a. Did the applicant adequately indicate how the predictive model was developed or if they used a preexisting third-party model as the basis for their predictive model? If the applicant used a third-party model, did they identify the model, third-party developer and provide a copy of the license terms under which the applicant used the third-party model?
- b. Did the applicant adequately indicate if the training data used to train the model was developed by them or if they obtained data from a third party? if a third party was used, did they provide a source of the data and a copy of the license terms under which the applicant used the third-party data?
- c. Did the applicant adequately indicate if they have sufficient rights and are willing to provide source code for the predictive model, grant a license that permits unrestricted modification, distribution and commercialization of the predictive model, access to training data and grant a license that permits unrestricted modification, distribution and commercialization of the data if selected as the winner?
- d. Did the applicant adequately indicate that they have sufficient rights to be willing to provide a period of exclusivity concerning FFAR, GAIN and their partner's use of the predictive model and data if selected as the winner?
- e. Did the applicant indicate their willingness to provide support and assistance to FFAR, GAIN and other users of the predictive model for a period of time if selected as the winner?
- f. Did the applicant adequately indicate that they have sufficient rights and are willing to make the predictive model and training data generally available to the public on open source or similarly permissive terms following a period of exclusivity if selected as the winner?
- g. If concluded that the applicant does not have sufficient rights, did they indicate if they can acquire such rights from a third party?

B. Impact & Outcome (35%)

List of Predicted Crops with the Potential for Functional Property(ies)

- a. Based on the procedures and associated outcomes, did the applicant adequately apply the predictive model to an input dataset that includes underutilized crops to make predictions of potential novel functional properties?
- b. Did the applicant provide a prioritized list of at least 10–15 underutilized crops that were predicted to have the potential for the selected functional property(ies)?
- c. Did the applicant adequately justify selected crops, including how the crops are prioritized based on the predicted functional property(ies), and the interpretation of confidence level from the predictive model?

Crop Functional Properties Experimental Validation/Testing

- a. Did the applicant adequately describe how the predictions are tested and validated by experimental assays?
- b. Did the applicant include in their validation (at least one) known crop and (at least three) underutilized crops from the predicted list to show the scalability and generalizability of the predictive model with adequate documentation?
- c. Did the applicant adequately describe the assay results for the predicted functional properties?
- d. Did the applicant adequately describe how the predicted functional property(ies) compare(s) to a control/standard functional ingredient/property(ies) currently used in the industry?
- e. Did the applicant adequately provide details on sample preparation, as well as how functional property/ingredient will be isolated from the plant source for testing and related factors, including instruments used, conditions and parameters, measurements taken and how results will be interpreted? Did the applicant adequately explain how each of these factors will affect the result and provide documents on successfully conducting the assay?

C. Feasibility (5%)

- a. If available, did the applicant provide information indicating products where selected properties can be more appropriately used/suitable (e.g., Ice creams, pastries, etc.)? Did the applicant provide adequate justification?
- b. Did the applicant adequately discuss how identified functional property(ies) are affected under different processing conditions and products?

- c. Did the applicant adequately indicate what processing and technology will be needed to extract/isolate raw materials/ingredients (if applicable)?

D. Team Qualification and Conclusion (10%)

- a. Did the applicant list the names of all team members, their expertise and their role in the predictive model development and validation?
- b. Did the applicant adequately describe the conclusion of the approach and the developed model, did it successfully solve the problem as stated at the beginning? Were the major outcomes of the approach and predictive model adequately stated? Were the suggested next steps for the predictions made from the predictive model adequate?
- c. Did the applicant share a 3–4-minute video presentation link that clearly showcases how the developed predictive model will be used in practice?

Step 2.1 Review Process

Up to 10 applicants from Review Step 1 will provide the predictive model and detailed instructions on running the predictive model as a one-line executable algorithm, with input and output data for assessment and validation, trained model, and the data set used to train the model with a description of how the training was conducted. An external computational contractor will run the model against an evaluation dataset and will synthesize a performance report. Panel reviewers will review the synthesized report and recommend up to five applications for further wet lab testing of predicted functional property(ies). Selection criteria will be based on performance metrics, such as accuracy, precision, recall and F1-measure.

Step 2.2 Review Process

Up to five applications will undergo another predictive model evaluation using a dataset compiled by FFAR and wet/experimental lab testing to test the functionality predicted by the model in a food science/food processing lab. The generated report will be reviewed by the panel to determine a winner for the US \$1M award.

An independent contractor/entity will:

- Test the model's ability to predict functional properties in selected crops.
- Test the ability of the model to predict functional properties in crops selected by FFAR.
- Test predicted functionality in different solution models/assays or products for potential applicability and prediction accuracy.

The US \$1M prize will not be awarded if model submissions do not meet the stated submission criteria. The US \$1M prize will only be awarded to the selected winner upon execution of an Agreement between FFAR, GAIN, and the selected winner covering the commercial use of the predictive model and data sets used to train the model.

Terms and Conditions

These Terms and Conditions (the “**Terms**”) apply to the Harvest for Health Breakthrough Crop Challenge (the “**Challenge**”) offered by the Foundation for Food & Agriculture Research (“**FFAR**”) and the Global Alliance for Improved Nutrition (“**GAIN**” and, together with FFAR, the “**Sponsors**”).

If you wish to participate in the Challenge, then you (“**Applicant**”) must accept and agree to be bound by these Terms. If you are an individual participating in the Challenge on behalf of, or for the benefit of, your employer, research institution, or any other company, corporation, partnership, or other legal entity with which you are associated (an “**Organization**”), then your acceptance of these Terms will constitute acceptance on behalf of yourself and such Organization, and you represent and warrant that you have the legal authority to bind such Organization to these Terms.

1. **Submissions.** In order to participate in the Breakthrough Crop Challenge, Applicant must first accept these Terms and then submit to Sponsors the information, data, technology, and other materials described in the submission criteria posted at (the “**Submission Materials**”).
2. **Evaluation of Submissions.** As a general matter, the evaluation of Submission Materials will occur as described in the review process referenced above. For clarity, however, all such evaluation, including the selection of any finalist and winning submissions, will be at the Sponsors’ discretion, and Sponsors are under no obligation to evaluate any Submission Materials, select any finalists or winning submissions, or award any prize in connection with the Breakthrough Crop Challenge. Without limitation of the generality of the foregoing, if Sponsors do not receive any submission that meets Sponsors’ requirements, then no winner will be declared and no prize will be awarded.
3. **Award.** If Sponsors select Applicant’s submission as the winning submission, then Sponsors will notify Applicant and Applicant will be eligible to receive the US \$1,000,000 Challenge award (the “**Prize**”). However, awarding of the Prize is conditioned upon execution of a mutually-agreed license agreement pursuant to which Applicant will grant

Sponsor and its partners the right to use the applicable Submission Materials for commercial purposes (the “**Commercial License**”). If Sponsors and Applicant do not execute the **Commercial License** within 30 days after Sponsors notify Applicant of its winning submission, then Applicant will not receive the Prize and Sponsors may, in their discretion, select a different winner of the Challenge.

4. **Evaluation License.** Applicant hereby grants to each Sponsor a non-exclusive, royalty-free license to use the Submission Materials for purposes of evaluating such Submission Materials in connection with the Challenge. For clarity, the foregoing license does not grant Sponsors any right to use the Submission Materials for commercial purposes, and any such commercial use rights will be addressed in the Commercial License.
5. **Necessary Rights.** Applicant represents and warrants that (a) Applicant has all rights necessary to participate in the Challenge, provide the Submission Materials to Sponsors, and grant the licenses granted in these Terms, without the need for any licenses, consents, or authorizations not yet obtained; and (b) the Submission Materials and Sponsors’ use thereof in accordance with these Terms will not infringe, misappropriate, or otherwise violate any intellectual property, privacy, or other rights of any third party, and will not be tortious, fraudulent, or otherwise unlawful. Applicant will indemnify and hold harmless Sponsors from and against all claims, liabilities, damages, judgments, awards, losses, costs, expenses and fees (including attorneys’ fees) arising out of or relating to any breach (or allegation that, if true, would be a breach) of any of the foregoing representations and warranties or otherwise relating to the Submission Materials.
6. **Disclaimer.** TO THE FULLEST EXTENT PERMITTED UNDER APPLICABLE LAW, SPONSORS DISCLAIM ALL REPRESENTATIONS AND WARRANTIES WITH RESPECT TO THE CHALLENGE AND ANY RELATED SUBJECT MATTER, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT, OR TITLE.
7. **Limitation of Liability.** TO THE FULLEST EXTENT PERMITTED UNDER APPLICABLE LAW, (A) SPONSORS WILL NOT BE LIABLE UNDER THESE TERMS OR OTHERWISE IN CONNECTION WITH THE CHALLENGE OR ANY RELATED SUBJECT MATTER FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL, EXEMPLARY OR PUNITIVE DAMAGES OF ANY KIND; AND (B) SPONSORS’ MAXIMUM AGGREGATE LIABILITY UNDER THESE TERMS OR OTHERWISE IN CONNECTION WITH THE CHALLENGE OR ANY RELATED SUBJECT MATTER WILL BE US \$500, IN EACH CASE (A) AND (B) REGARDLESS OF THE NATURE OF THE CLAIM OR CAUSE OF ACTION,

WHETHER BASED IN CONTRACT, TORT, STATUTE, FRAUD, MISREPRESENTATION OR ANY OTHER LEGAL THEORY.

8. **Dispute Resolution.** If there is any controversy, claim or dispute arising out of or relating to these Terms or the breach thereof, or otherwise relating to the Challenge or any related subject matter, whether based on contract, tort, statute or other legal or equitable theory (the “**Dispute**”), then the Dispute will be settled by binding arbitration administered by JAMS in accordance with its applicable rules then in effect. The Terms and their interpretation and validity will be governed by the substantive law of the State of New York applicable to contracts made and to be performed within the State and without regard to the State’s conflicts of laws rules that would result in the application of the laws of another jurisdiction, and without giving effect to the conflicts of law principles of any jurisdiction. The location of the arbitration will be New York, New York. The arbitration will be governed by the United States Arbitration Act, 9 U.S.C. §§ 1-16. The award of the arbitrator will be final and binding, and judgment on the award may be entered, confirmed and enforced in any court having jurisdiction thereof. Nothing in this Section will preclude any party from seeking interim or provisional relief concerning the Dispute, including a temporary restraining order, a preliminary injunction or an order of attachment, either prior to or during the arbitration, in order to protect the interests of such party.

9. **Miscellaneous.** These Terms do not create any partnership, joint venture, employer-employee, agency or franchisor-franchisee relationship between Applicant and Sponsors. If any provision of these Terms is found to be unenforceable for any reason, that provision will be considered separable and will not affect the enforceability of any other provision. Applicant may not assign, transfer or sublicense any of Applicant’s rights or obligations under these Terms. Sponsors may assign, transfer or sublicense any or all of their rights or obligations under these Terms without restriction. Neither party’s waiver of any breach under these Terms will be considered a waiver of any earlier or later breach. Any headings in these Terms are for convenience only. The term “including” and its variations will be interpreted as if followed by the phrase “without limitation.” These Terms including any incorporated terms (including the submission criteria), is the entire agreement between Applicant and Sponsors relating to its subject matter, and supersedes any earlier or contemporaneous agreements or understandings between Applicant and Sponsors relating to that subject matter. Sponsors will not be responsible for any failure to fulfill any obligation due to any cause beyond their control.