



XPRIZE
FEED THE
NEXT BILLION



ASPIRE

COMPETITION GUIDELINES 2.0

February 4, 2021

XPRIZE Feed the Next Billion | ASPIRE is governed by these **Competition Guidelines**. The Competition Guidelines summarize the high-level requirements and rules of the competition.

XPRIZE may revise these Guidelines at any time during the course of the competition to provide additional information or to improve the quality of the competition. Unanticipated issues that arise may require modifications to these Guidelines. XPRIZE reserves the right to revise these Guidelines as it, in its sole discretion, deems necessary. All registered teams will be notified of revisions in a timely manner.

For further details concerning the operation of the competition, such as exact dates and locations of events, specific technical thresholds for performance testing, and operational information, please refer to the **Rules and Regulations**, **Competitor Agreement**, and other documents throughout the course of the competition.

The Rules and Regulations will be developed by XPRIZE in consultation with the competition's **Advisory Board** and **Judging Panel** and will be provided to all registered teams in advance of the events they govern.

Please send any questions about this competition and/or feedback regarding the Competition Guidelines to feedthenextbillion@xprize.org.

NOTE: **Bolded** items are defined in Section 07: Glossary.

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01. COMPETITION OVERVIEW

By 2050, Earth's population is projected to grow to 9.7 billion.¹ In tandem with population growth, global wealth is increasing and producing a more robust middle class.² Demand for high-protein diets is increasing as nations move into wealth and the global middle-class expands.³ According to the Food and Agriculture Organization (FAO) of the United Nations (UN), poultry production increased 28 percent between the mid-1960s and today. Additionally, fish represents 17 percent of global animal protein consumption, and 26 percent in poor or developing countries.⁴

Conventional meat production trends and practices, especially within the chicken and seafood industries, have produced core problems that are forecast to intensify as the world strives to meet growing demand:

- Continued environmental degradation
- Food safety and malnutrition
- Inhumane treatment of animals and biodiversity loss

As conventional meat production and consumption trends continue, the resources consumed to satisfy this global demand have the potential to accelerate deforestation and biodiversity loss, strain global water supply, accelerate climate change, intensify inhumane treatment of animals, and worsen food safety and malnutrition issues.

While there is increasing activity in utilizing plant-based, cultivated or blended approaches to create meat alternatives such as burgers, chicken nuggets, and ground fish, more work is needed to produce structured, nutritious, affordable, and versatile alternative chicken and fish products that are capable of competing with conventional products on the market. Moreover, cultivated approaches face challenges with the high cost and extraction method of **Growth Media**.

XPRIZE Feed the Next Billion | ASPIRE (the "Competition") is a \$15M competition that will incentivize teams to produce chicken breast or fish fillet **Alternatives** that replicate or outperform conventional chicken and fish in: access, environmental sustainability, animal welfare, nutrition and health, as well as taste and texture. For the purposes of this competition, alternatives are defined as chicken or fish products that eliminate or (where applicable) reduce

¹ "Growing at a Slower Pace, World Population Is Expected to Reach 9.7 Billion in 2050 and Could Peak at Nearly 11 Billion around 2100 | UNDESA | United Nations Department of Economic and Social Affairs." 2019. UNDESA | United Nations Department of Economic and Social Affairs. June 17, 2019.

² Homi Kharas. 2017. "The Unprecedented Expansion of the Global Middle Class." Brookings. Brookings. February 28, 2017. <https://www.brookings.edu/research/the-unprecedented-expansion-of-the-global-middle-class-2/>

³ Food and Agriculture Organization of the United Nations. 2009. "FAO- News Article: 2050: A Third More Mouths to Feed." Fao. Org. 2009. <http://www.fao.org/news/story/en/item/35571/icode/>

⁴ Mukhisa Kituyi, and Peter Thomson. 2018. "Nearly 90% of Fish Stocks Are in the Red – Fisheries Subsidies Must Stop." World Economic Forum. July 13, 2018.

reliance on whole animal sources while minimizing harm to the environment during their sourcing, processing, and production.

The winning team will develop multiple consistent cuts of chicken breast or fish fillet alternatives (85-115 grams / 3-4 ounces) that replicate the sensory properties, structure, versatility, and nutritional profile of conventional chicken or fish, while having a lower environmental footprint.

A bonus prize will be awarded to the team that develops a whole-animal-origin-free growth media at the lowest production cost.

The alternatives developed as a result of this competition will provide a more environmentally sustainable path to meeting emerging markets' demand for high-protein products, human health, and animal welfare.

O2. COMPETITION STRUCTURE

This competition is structured into three rounds over approximately four years, as displayed in Table 1.

Table 1: Competition Calendar

December 7, 2020	Prize Launch: Team Registration Opens & Draft Guidelines Released for Public Comment
January 15, 2021	Draft Competition Guidelines Public Comment Deadline
February 2021	Updated Competition Guidelines Released
February 28, 2021	Early Registration Deadline
March 2021	Rules and Regulations Released
April 16, 2021	Technical Submission Opens
June 7, 2021	Team Registration Deadline & Technical Submission Deadline
June-July 2021	Technical Submission Judging & Semifinalist Teams Announced (up to 30 teams split \$500k)
July 2021	Semifinalist Team Summit
Q3 2021 to Q3 2022	Semifinalist Teams Solution Development
December 1, 2021	Late Registration Deadline
Q2 2022	Semifinalist Verification
Q3 2022	Semifinal Testing and Judging
Q3 2022	Finalist Teams Announced (up to 10 teams split \$2.5M)
Q3 2022 to Q4 2023	Finalist Teams Solution Development
Q2 2023	Finalist Team Summit
Q4 2023	Finalist Team Verification
Q4 2023 to Q1 2024	Final Testing and Judging
Q1 2024	Awards Ceremony and Winners Announced (\$12M Awarded)

Note: The above dates are subject to change.

TEAM REGISTRATION

XPRIZE believes that **Solutions** can come from anyone, anywhere. Scientists, engineers, academics, entrepreneurs, and other innovators from all over the world are invited to form a team and register to compete. To participate, a team is required to first create an account in the [Prize Operations Platform \(POP\)](#). POP is an online platform through which teams will register for the competition, pay the required registration fee, and submit important documents throughout the competition. Teams are expected to maintain their POP profiles throughout the competition, ensuring their profile is up to date with the most recent team information.

Taking part in an XPRIZE competition is an exciting journey that often requires a commitment of time, expertise, and resources. Registration fees are required as a simple qualifier to ensure competitors will be able to obtain the appropriate resources to fully compete in the prize. All fees collected are used to support XPRIZE competition teams. Early Registration opens on December 7, 2020 with a registration fee of \$1,000 (USD). The Early Registration deadline is February 28, 2021.

The registration fee for teams who register between March 1, 2021 and the Team Registration deadline of June 7, 2021 is \$1,500 (USD).

XPRIZE has sole discretion to register and qualify additional teams between the Team Registration Deadline and Late Registration Deadline of December 1, 2021. Teams that register during this period must meet all applicable registration and submission requirements and pay a late registration fee of \$2,500 (USD). XPRIZE reserves the right to restrict team registrations during this limited opportunity and potential teams should contact XPRIZE directly for more details.

Interested Teams and individuals are encouraged to collaborate and share skills. A team may recruit additional experts and can add new members to their team at any time throughout the competition. Teams may also merge with other teams during the competition. Teams must notify XPRIZE of a merger before it takes place. In the case of mergers, teams must register under one legal entity and assign one team leader. Additional details regarding team mergers are provided in the Competitor Agreement.

Throughout the registration period, XPRIZE will host a series of webinars for all **Interested Teams**. XPRIZE webinars will allow teams to get to know each other and also to receive important competition updates. Participation in these webinars, while not mandatory, is strongly encouraged.

COMPETITION ROUNDS

The competition runs over three rounds of testing, judging, and team selection: **Technical Submissions, Semifinals, and Finals**. Throughout these rounds, teams will be asked to submit white paper submissions, video footage, supporting documentation, and product prototypes that demonstrate teams' solutions in accordance with the competition criteria. Team submissions will be reviewed by an independent Judging Panel, which is responsible for making the final decisions on advancing teams from one round of the competition to the next. Team submissions will be assessed in a way that upholds confidentiality as well as fair and equal consideration of all competition criteria, without favoring one criterion over another unless explicitly specified.

TECHNICAL SUBMISSION

Each team will be required to submit technical documentation detailing their approach and proposed technologies in the form of a Technical Submission. All teams must provide a complete Technical Submission on POP between Apr 16, 2021 and June 7, 2021 and the Judging Panel will review the Technical Submissions to determine which teams will move forward and compete in subsequent rounds of the competition.

The Competitor Agreement must be signed and submitted to XPRIZE prior to the Judging Panel's review of any Technical Submissions. The Technical Submission is also intended to inform XPRIZE and the Judging Panel about potential operational requirements or risks related to testing for this competition. The Technical Submission will outline the team's solution and demonstrate the team's ability to achieve the competition Testing Requirements (Tables 2 & 3) and/or the Bonus Prize Testing Requirements (Table 4). The Technical Submission may request the following:

- A description of the proposed solution, focusing specifically on whether the team is pursuing development of a structured chicken breast or fish fillet alternative
- The degree of technological or operational innovation with respect to meeting prize evaluation criteria
- The team's ability to meaningfully demonstrate capabilities in the timeline of the prize
- Teams will provide cited metrics as well as projections for the following environmental footprint targets: land, water, and energy as they relate to their target product. For example, salmon products compared to published salmon environmental footprint metrics.
- A description of company operations, business plan, description of team members and expertise
- An economic evaluation detailing all available data regarding cost estimates and/or projections of teams' final products. This information is intended to showcase potential for cost competitiveness with similar novel products and will not be used to score teams negatively.

- Any challenges the team foresees with regard to implementing a demonstration including permitting, capital needs, etc.
- Whether the team intends to participate in the Bonus Prize Testing component of the competition

The Technical Submission will be reviewed by the Judging Panel and up to 30 teams will be selected as **Semifinalist Teams** to continue forward in the competition. Semifinalist Teams will split a prize purse of \$500,000 (USD) to help offset costs associated with early solution development and for upcoming travel to Semifinal Testing locations.

SEMIFINAL TESTING

Semifinalist Teams will have approximately 12 months (Q3 2021 to Q3 2022) to develop their solutions ahead of **Semifinal Testing**. Prior to participating in Semifinal Testing, teams will be required to submit materials to verify they are prepared to proceed in the competition. The **Semifinalist Verification** will likely entail both a written technical document and video demonstrations of the team's progress towards developing a solution ahead of Semifinal Testing. XPRIZE may request routine updates from teams throughout the solution development period and the deadline to verify Semifinalist teams is currently scheduled for Q2 2022.

After Semifinalist Verification, up to 30 Semifinalist Teams will physically demonstrate their solutions at Semifinal Testing where they will provide a cooked chicken or fish **Cutlet** which the Judging Panel will evaluate. The **Semifinal Submission** will likely include both a physical cooked cutlet, as well as a written technical document describing the team's solution, and it will demonstrate the team's ability to achieve the competition's Semifinalist Testing requirements.

The below testing requirements are currently envisioned to guide teams' solution development. The exact parameters for testing will be released in later versions of the Rules & Regulations ahead of testing:

- Size - structured cutlets that are approximately 43-57g (1.5-2 oz)
- Nutritional profile - product must be nutritionally equivalent (90 percent accuracy) to conventional chicken or fish product
- Preparation and cookability - teams will use limited preparation ingredients: salt, pepper, and fat
- Organoleptic (sensory) properties
- Environmental footprint projections - teams will update environmental footprint projections provided in their Technical Submission
- Economic Evaluation - teams will update economic evaluation data and information provided in their Technical Submission

Testing may be conducted regionally and will be supervised in a controlled environment. Exact testing requirements, along with details and regional locations for the Semifinal Testing will be released in the Rules and Regulations in advance of testing. Following Semifinal Testing, the Judging Panel will select up to ten **Finalist Teams** to split a prize purse of \$2,500,000 (USD) and proceed to Final Testing.

FINAL TESTING

Prior to participating in **Final Testing**, teams will be required to submit materials to verify they are prepared to proceed to the final round of the competition. The **Finalist Verification** will likely entail both a written technical document and video demonstration of the team's solution.

Finalist Teams will have approximately 15 months (Q3 2022 to Q4 2023) to further develop their solutions and, for their **Final Submission**, will provide at least 25 cuts of alternative chicken breast or fish fillet at standard serving sizes, which the Judging Panel will evaluate. This submission will likely include both physical cuts and a written technical document describing the team's solution. The Judging Panel will review these submissions to select the Grand Prize Winners and the Bonus Prize Winner.

The Final Submission will demonstrate the team's ability to achieve the competition's Final Testing Requirements (Table 3). The product may be prepared by celebrity chefs using local recipes and served to a group of individuals and members of the Judging Panel as part of a blind taste test. Testing will be conducted live and may be televised or streamed for an audience. Judges will evaluate teams on several key criteria, such as:

- Size - whole cuts that are approximately 85-115g (3-4 oz)
- Nutritional profile - products must be nutritionally equivalent (90 percent accuracy) to conventional chicken or fish product
- Preparation and cookability - products will be prepared by culinary professionals
- Organoleptic (sensory) properties
- Consistency - teams must produce at least 25 units of the final product
- Product Versatility - products must be easily incorporated into 3 recipes that are geographically diverse
- Environmental footprint required to produce alternative products will be compared with that required for comparable conventional products.
- Economic Evaluation - teams will update economic evaluation data and information provided at the Technical Submission

The Grand Prize winning team will: Create at least 25, 85-115 grams (g) or 3-4 ounces (oz) structured chicken breast or fish fillet alternatives that replicate the sensory properties, structure, versatility, and nutritional profile of conventional chicken or fish, while having a lower environmental footprint.

As detailed in *Section 4: Prizes*, a Grand Prize Purse of \$10,000,000 (USD) will be awarded to the teams whose solutions receive the highest scores following the final round of the competition.

Testing format and requirements, the order for teams to test, and further information regarding the locations for Final Testing will be finalized and provided in the Rules and Regulations in advance of each round of testing.

BONUS PRIZE

Teams that choose to compete for the Bonus Prize must meet the Bonus Prize Testing Requirements outlined in Table 4. A Bonus Prize of \$2,000,000 (USD) will be given to the team that consistently produces multiple units of whole-animal-origin-free growth media at the lowest production cost. Judges will evaluate teams on several key criteria:

- Price
- Whole-Animal-origin-free (co-cultures allowed ^{5,6})
- Lowest environmental footprint

Cell growth media comparisons will be standardized to control for concentration (cells/mL fed) and duration of use (cost of media per day).

Following Final Testing, the Judging Panel will convene to review team submissions, discuss the results, and determine the winners of the Grand Prize and the Bonus Prize. The winning teams will be announced at an Award Ceremony hosted by XPRIZE.

Throughout the competition, except during testing, teams are welcome to continue to develop, iterate, and adapt their solutions.

Each team will be responsible for their own travel and for any costs associated with the transportation of their solution for testing. Teams may be required to attend rehearsal periods in addition to scheduled testing day(s).

XPRIZE will produce final testing criteria in later releases of the Rules and Regulations for this competition.

⁵ Goers, L.; Freemont, P.; Polizzi, K. M. Co-Culture Systems and Technologies: Taking Synthetic Biology to the Next Level. *Journal of The Royal Society Interface* 2014, 11 (96), 20140065. <https://doi.org/10.1098/rsif.2014.0065>.

⁶ Vithoukias, A.; Levanduski, M. J.; Goudas, V.; Illmensee, K. Growth Factors IGF-I and IGF-II in Human Embryo Co-Culture with Autologous Granulosa Cell Clusters Compared to Regular Embryo Culture in IVF. *Fertility and Sterility* 2016, 106 (3), e362. <https://doi.org/10.1016/j.fertnstert.2016.07.1027>.

03. TESTING CRITERIA

In order to be eligible for any **Prize Purse** during the competition, teams must meet or exceed all Testing Criteria requirements established by XPRIZE and the Judging Panel. Examples of the minimum requirements currently under consideration for Testing Criteria for each round are summarized in Table 2, Table 3, and Table 4. These examples are being provided to help guide teams in their solution development ahead of testing. Teams will be scored based on performance above minimum requirements as described in each table, with the exact details for testing requirements to be released in the Rules and Regulations ahead of each round of testing.

TABLE 2. Example Semifinalist Testing Requirements

CRITERIA	SCREENING	EVALUATION TYPE	NOTES
Size	Teams must produce cooked cutlets that are, at minimum, 43-57g (1.5-2 oz) - half the size of a standard serving size.	Pass/Fail	N/A
Nutritional profile	A Nutritional Profile Assessment will be conducted to compare teams' chicken and fish alternatives to the conventional product. Alternative products should mirror, with a minimum 90 percent accuracy, the nutritional profile of the conventional product.	Scorecard	This metric is intended to be flexible to incorporate numerous subtle variations in nutritional profile between team solutions. The degrees of flexibility will be determined by the Judging Panel.
Preparation and cookability	Teams will prepare the products themselves for a group of blind taste testers using limited ingredients (salt, pepper, and fat). Teams that do not adhere to this requirement will be an automatic fail.	Pass/Fail	The ability to prepare the cooked product with limited ingredients will be evaluated.

<p>Organoleptic properties: taste, texture, mouthfeel, and smell</p>	<p>Teams will be evaluated on the organoleptic properties of their cooked cutlets by way of a scorecard that incorporates all aspects of the sensorial experience of consumption. Taste and mouthfeel will be evaluated in a blind taste test. Texture will be evaluated using a Texture Profile Analysis, or comparable test.</p>	<p>Scorecard</p>	<p>At this stage, the blind taste test will be taken by volunteers and/or the Judging Panel.</p>
<p>Environmental Footprint Projections</p>	<p>Teams will update the environmental footprint projections that they submitted for the Technical Submission on land, water, and energy usage as they relate to their target product.</p>	<p>Paper Submission</p>	<p>Teams are encouraged to work with a university or partner to provide substantiated environmental footprint projections.</p>
<p>Economic Evaluation</p>	<p>An economic evaluation detailing all available data regarding cost estimates and/or projections of teams' final products. This information is intended to showcase potential for cost competitiveness with similar novel products and will not be used to score teams negatively.</p>	<p>Paper Submission</p>	<p>N/A</p>

TABLE 3. Example Finalist Testing Requirements

CRITERIA	SCREENING	EVALUATION TYPE	NOTES
Size	Teams must produce cooked cuts that are 85-115g (3-4 oz); a standard serving size.	Pass/Fail	NA
Nutritional Profile	<p>A Nutritional Profile Assessment will be conducted to compare teams' poultry and fish alternatives to the conventional product. Alternative products should mirror the nutritional profile of the conventional product (approximately 90 percent accuracy).</p> <p>Nutritional profile must be consistent (see criteria below) across multiple units.</p> <p>All ingredients, including the organisms used to generate protein products, must be GRAS approved, and if necessary, the team must apply for US regulatory compliance.</p>	Scorecard	This metric is intended to be flexible to incorporate numerous subtle variations in nutritional profile between team solutions. The degrees of flexibility will be determined through consultation with the Advisory Board and Judging Panel.
Preparation and cookability	<p>Products will be prepared by culinary professionals and must closely mimic traditional, animal-derived meat counterparts.</p> <p>At the time of Final Submission, teams will include both physical product samples alongside a</p>	Scorecard	It is vital for product adoption that these innovative submissions require little to no re-education in their handling and preparation. Regardless of the product's format as

	<p>written technical document describing the team’s solution. Within that technical document, it is recommended that consumer-level language be used to instruct on handling and preparation. This will be taken into account by the culinary experts who will prepare recipes.</p>		<p>raw or partially cooked, it must be cognizant of food safety standards that are realistic in production scale and consumer settings.</p>
<p>Organoleptic properties: taste, texture, mouthfeel, and smell</p>	<p>Teams will be evaluated on the organoleptic properties of their final products by way of a scorecard that incorporates all aspects of the sensorial experience of consumption. Taste and mouthfeel will be evaluated in a blind taste test. Texture will be evaluated using a Texture Profile Analysis, or comparable test.</p> <p>A group of up to 100 people and members of the Judging Panel will convene to participate in a blind taste test to assess the teams’ final products. Further details regarding the taste test portion of Final Testing will be shared in upcoming releases of the Rules & Regulations for this competition.</p>	<p>Scorecard</p>	<p>In addition to taste, texture, mouthfeel, and smell, teams will also be tested on their ability to demonstrate consistency (see criteria below) of this criteria across multiple units.</p>
<p>Consistency</p>	<p>In addition to meeting larger unit size requirements, teams must demonstrate consistency across units in the final product demonstration by producing at least 25 units of 85-115g (3-4 oz) product. All units</p>	<p>Pass/Fail</p>	<p>N/A</p>

	<p>should be equal in size, composition, nutritional profile, and organoleptic properties.</p>		
Versatility	<p>During the Final Testing, product versatility will be evaluated. To evaluate versatility, culinary professionals will prepare the alternative products in 3 recipes representing different geographical cuisines. The prepared dishes will be blind taste-tested by the Judging Panel alongside a group of up to 100 blind taste testers.</p> <p>Further details regarding the versatility portion of Final Testing will be shared in the Rules & Regulations for this competition.</p>	Pass/Fail and Scorecard (to capture subtleties of preparation)	The versatility criteria include a diversity of geographically relevant recipes to ensure product-market fit in more than one part of the world.
Weighted Environmental Footprint	<p>Environmental footprint required to produce alternative products will be compared to the footprints of comparable conventional products.</p> <p>Teams will be evaluated via an objective 3rd party entity that will conduct anonymized life cycle assessments or comparable environmental impact evaluation</p> <p>We will work closely with winners of the semi-finalist stage and will create metrics that favor innovative solutions that exist at economies of scale.</p>	Ranking	Teams are encouraged to work with a university or partner to provide substantiated environmental footprint projections and comparisons.

Economic Evaluation	An economic evaluation detailing all available data regarding cost estimates and/or projections of teams' final products. This information is intended to showcase potential for cost competitiveness with similar novel products and will not be used to score teams negatively.	Paper Submission	N/A
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TABLE 4. Example Bonus Prize Requirements

CRITERIA	SCREENING	EVALUATION TYPE	NOTES
Normalized Cost	<p>Teams will be incentivized to produce growth media at the lowest production cost per liter. The team with the lowest cost to produce will be ranked highest.</p> <p>Media must not originate from whole-animal sources, but may contain co-cultured components⁶ that may modulate growth factor requirements and/or concentrations⁷.</p> <p>Evaluation will control for concentration (cells/mL fed) and duration of use (cost of media per day of use without changing media OR the team will be required to factor in the cost of media recycling practices normalized standards described above).</p>	Ranking	<p>Growth media used for cell cultures can cost hundreds of dollars per liter. Unless this competition incentivizes cost reduction, there is limited motivation for existing life science companies to produce growth media for this nascent industry. This will also encourage greater availability of low-cost growth media, rather than create siloed, proprietary formulations within individual companies – the direction in which the industry is currently heading. Teams that lower the cost of growth media per liter will be more highly ranked.</p>
Whole-animal-origin-free	<p>Teams that produce whole-animal-origin-free (containing components not derived from whole animals) media may receive scores.</p>	Scorecard	<p>Animal-origin growth media drives cost, thus teams that innovate using an animal-origin-free growth media are</p>

⁶ Goers, L.; Freemont, P.; Polizzi, K. M. Co-Culture Systems and Technologies: Taking Synthetic Biology to the next Level. *Journal of The Royal Society Interface* 2014, 11 (96), 20140065. <https://doi.org/10.1098/rsif.2014.0065>.

⁷ Vithoulkas, A.; Levanduski, M. J.; Goudas, V.; Illmensee, K. Growth Factors IGF-I and IGF-II in Human Embryo Co-Culture with Autologous Granulosa Cell Clusters Compared to Regular Embryo Culture in IVF. *Fertility and Sterility* 2016, 106 (3), e362. <https://doi.org/10.1016/j.fertnstert.2016.07.1027>.

			accomplishing the “animal cruelty free” criteria as well as lowering cost for growth media. This criteria will be a Scorecard requirement at the discretion of the Judging Panel, as appropriate.
Incorporation into alternative products	To be eligible for the Bonus Prize, teams must be competing in the main competition and must use the whole-animal-origin-free media to develop products produced.	Pass/Fail	N/A

04. PRIZES

The Competition will be a total Prize Purse of \$15,000,000 (USD) and is divided as follows.

Semifinalist Prize

A prize purse in the amount of \$500,000 (USD) will be shared equally between up to 30 Semifinalist Teams selected by the Judging Panel to advance to Semifinal Testing. These funds are intended to help offset costs associated with early solution development and for travel to Semifinal Testing locations.

Finalist Prize

A Finalist Prize purse in the amount of \$2,500,000 (USD) will be shared equally between up to 10 Finalist Teams whose solutions are selected to advance to Final Testing.

Bonus Prize

A Bonus Prize of \$2,000,000 (USD) will be awarded to acknowledge the breakthrough achievement of the team that develops a whole-animal-origin-free growth media at the lowest production cost.

Grand Prize

After Final Testing, XPRIZE will host an awards ceremony to announce the Grand Prize winning teams. A Grand Prize totaling \$10,000,000 (USD) will be awarded to the three teams whose solutions receive the highest scores following the final round of the competition.

- The First Place team will be awarded \$7,000,000 (USD)
- The Second Place team will be awarded \$2,000,000 (USD)
- The Third Place team will be awarded \$1,000,000 (USD)

05. ROLES AND RESPONSIBILITIES

ADVISORY BOARD

- A. SELECTION OF ADVISORS.** XPRIZE will appoint a panel of topical experts and big-picture thought leaders to serve as the Advisory Board for the competition. The Advisory Board will remain in place throughout the competition to advise XPRIZE regarding the scientific and other elements of the competition.
- B. INDEPENDENT ADVISORY BOARD.** The Advisory Board will be independent of XPRIZE and all teams and team members. No Advisor, nor any member of the Advisor's immediate family, shall participate, nor have any financial or other material interest, in XPRIZE, the Sponsor(s), and/or any team or team member. All members of the Advisory Board shall promptly disclose to XPRIZE any such current, former, or expected future conflict of interest with XPRIZE, the Title Sponsor, or any team or team member.
- C. ROLE OF ADVISORY BOARD.** The duties and responsibilities of the Advisory Board may include, but not be limited to: (i) assisting with the establishment of qualifications for prospective Judges; (ii) recommending members of the Judging Panel; (iii) assisting with development of testing protocols and judging criteria; (iv) and providing input toward the development of these Competition Guidelines.

JUDGING PANEL

- A. SELECTION OF JUDGES.** The Judging Panel (as defined in the Competitor Agreement) will be composed of highly qualified and impartial Judges with relevant subject matter and technical expertise.
- B. INDEPENDENT JUDGING PANEL.** The Judging Panel will be independent of XPRIZE, the Title Sponsor, any other prize sponsors, and all teams and team members. No Judge, nor any member of Judge's immediate family, shall participate, nor have any financial or other material interest, in XPRIZE, the sponsor(s), and/or any team or team member. All members of the Judging Panel shall promptly disclose to XPRIZE any such current, former, or expected future conflict of interest with XPRIZE, the sponsor, and/or any team or team member.
- C. ROLE OF JUDGING PANEL.** The duties and responsibilities of the Judging Panel will include, but not be limited to: (i) evaluating teams' compliance with the Competitor Agreement as they relate to prize operations, these Competition Guidelines, and the Rules and Regulations for the purposes of the competition; and (ii) the awarding of

points and selection of teams that will proceed to each subsequent round of the competition.

- D. GROUNDS FOR JUDGING PANEL DECISIONS.** Official decisions made by the Judging Panel will be approved by a majority of the Judges that vote on each such decision after careful consideration of the testing protocols, procedures, guidelines, rules, regulations, criteria, results, and scores set forth in the Competitor Agreement, these Competition Guidelines, Rules and Regulations, and all other applicable exhibits to the Competitor Agreement. If any vote of the Judges results in a tie, then the Judging Panel shall determine, in its sole and absolute discretion, the mechanism to settle the tie. Similarly, if one or more teams are tied at any stage during the competition, the Judging Panel shall have the sole and absolute discretion to settle the tie.
- E. DECISIONS OF JUDGING PANEL ARE FINAL.** The Judging Panel shall have sole and absolute discretion: (i) to allocate duties among the Judges; (ii) to determine the degree of accuracy and error rate that is acceptable to the Judging Panel for all competition calculations, measurements, and results, where not specified in the Rules and Regulations; (iii) to determine the methodology used by the Judging Panel to render its decisions; (iv) to declare the winners of the competition; and (v) to award the prize purses and other awards. Decisions of the Judging Panel shall be binding on XPRIZE, teams, and each team member. XPRIZE and teams agree not to dispute any decision or ruling of the Judging Panel, including decisions regarding the degree of accuracy or error rate of any competition calculations, measurements, and results. Teams shall have no right to observe other teams' testing or evaluation, or to be informed of other teams' calculations, measurements, and results, unless such information is made publicly available by XPRIZE.

06. ENVIRONMENT AND SAFETY

Safety is a top priority for all XPRIZE competitions. Solutions must minimize environmental harm and ensure the safety of the participants, blind testers, and surrounding communities. Teams must comply with the following requirements:

- Compliance with all existing environmental, health, and safety regulations.
- Compliance with food health and safety standards during product testing at different stages of the competition.
- Disclose ingredients as well as separately identify the top allergens unique to their region, as well as the US⁸ and Canada⁹.
- As mandated by the Competitor Agreement, teams will acquire and hold all necessary licenses and insurance to demonstrate safety compliance and liability coverage required for participation in this competition.

Additional details regarding Environment and Safety for teams' solution development and testing will be provided in the Rules and Regulations for this competition. XPRIZE reserves the right to adjust the Competition Guidelines or Rules and Regulations based on the latest scientific and legal information available at the time to ensure personal and environmental safety. XPRIZE will make all final determinations on safe and acceptable practices for competition operations.

⁸ U.S. Food and Drug Administration, "Food Allergies," January 28, 2021, <https://www.fda.gov/food/food-labeling-nutrition/food-allergies>><https://www.fda.gov/food/food-labeling-nutrition/food-allergies>.

⁹ Government of Canada, "Allergens and Gluten Sources Labelling," June 15, 2020, <https://www.canada.ca/en/health-canada/services/food-allergies-intolerances/avoiding-allergens-food/allergen-labelling.html>><https://www.canada.ca/en/health-canada/services/food-allergies-intolerances/avoiding-allergens-food/allergen-labelling.html>.

07. GLOSSARY

Advisory Board: A select group of prominent advisors who contribute their wisdom, knowledge and guidance to various aspects of the prize.

Alternative: For the purposes of this competition, alternatives are defined as chicken or fish products that eliminate or (where applicable) reduce reliance on whole animal sources while minimizing harm to the environment during their sourcing, processing, and production.

Co-culture: “A co-culture is a cell cultivation set-up, in which two or more different populations of cells are grown with some degree of contact.¹⁰”

Competition Guidelines: Document for the public and for teams that describes the requirements and parameters of the competition.

Competitor Agreement: A legal and binding document that details the responsibilities of competitors for the prize.

Final Testing: The last phase of testing events for the prize that will determine the Grand Prize and Bonus Prize winning teams.

Final Submission: Likely to include both physical cuts (25) and a written technical document of the team’s solution, the Final Submission will be evaluated by the Judging Panel during Final Testing to select the Grand Prize Winners and the Bonus Prize Winner.

Finalist Verification: This is a mandatory update to ensure teams are prepared to proceed to Final Testing. This will most likely consist of written and filmed components provided by teams to XPRIZE.

Judging Panel: The subject matter and technical experts who serve as an impartial and independent evaluation team for all aspects of this prize. Judges score the team submissions and make the final award determinations in both Semifinal Testing and the Final Testing.

Growth Media: Growth media or culture media is food for cells and contains all of the nutrients that cells need to survive and thrive. It often contains Fetal Bovine Serum (FBS), a whole-animal-derived product that supports cell growth.

Prize Operations Platform (POP): The standard internal XPRIZE portal for teams to input data, documents, and other information for use in this Competition.

Prize Purse: This refers to money offered, won, or received as a prize. It also refers to the overall amount of funds allocated to all prizes in this competition.

¹⁰ Goers, L.; Freemont, P.; Polizzi, K. M. Co-Culture Systems and Technologies: Taking Synthetic Biology to the next Level. *Journal of The Royal Society Interface* 2014, 11 (96), 20140065.
<https://doi.org/10.1098/rsif.2014.0065>.

Technical Submission: The Judging Panel will review Technical Submissions to verify each team's ability to participate in Semifinal testing. This is a form in POP that must be completed by all Registered Teams. It consists of a series of questions to be answered that outline the expertise, capabilities and plans for the functional solution that each team will be creating. It may also include an Executive Summary of up to two pages of text, and any supporting images, diagrams, or charts.

Rules and Regulations: Document detailing the testing protocols, specific rules, dates/times, and other details that will govern the competition and will be binding on teams.

Semifinal Submission: Likely to include a physical cooked cutlet and a written technical document describing the team's solution, the Semifinal Submission will demonstrate the team's ability to achieve the competition's Semifinalist Testing requirements.

Semifinalist Verification: This is a team-provided update to ensure teams are prepared to proceed to Semifinal Testing and consists of written and filmed components which will be reviewed by the Judging Panel.

Semifinal Testing: The set of testing events for the prize that will help determine which teams progress to Final Testing.

Solution: This refers to a team's specific submission (including all technical documentation and physical prototypes) that the Judging Panel will evaluate for this competition.

Team Definitions:

- **Interested Team(s):** A team or individual that is interested in participating in the competition and has created a profile in the XPRIZE POP system.
- **Registered Team(s):** A team that has paid the required registration fee, signed the Competitor Agreement, and submitted a Technical Submission for the Judging Panel's review.
- **Semifinalist Team(s) (up to 30 teams):** A team that has been selected by the Judging Panel to proceed in the competition based on the strength of their Technical Submission and who has passed the Semifinalist Verification prior to testing.
- **Finalist Team(s) (up to 10 teams):** A team that has successfully completed Semifinal Testing and is approved by the Judging Panel to attend Finals Testing. Finalist Teams must also pass the Finalist Verification prior to testing.