MTRAC AgBio Hub Proposal Submission–

2022 Tier I Full Funding

due November 30th, 2022

Welcome to the Tier I Full Proposal Submission Process for the Michigan Translational Research and Commercialization Innovation Hub for Ag&Bio (MTRAC AgBio Program or MTRAC AgBio Hub or MTRAC) located at Michigan State University. MTRAC provides resources for translational research projects related to Agriculture and Biology (AgBio) with high commercial potential in one or more bio-related industries (excluding human medicine). More specifically, the MTRAC AgBio Hub funds translational projects in agriculture and biology, including but not limited to food, fiber, fuel and environmental improvement. It’s project scope also includes natural resources, animal science, water, bioprocessing and renewable (bio)energy. These resources could include funding for translational studies such as crop trials, scale-up studies, prototype development, application verification, and animal trials. Additionally, MTRAC provides focused commercialization assistance, which may include consultation or mentoring from industry and investment experts.

The goal of MTRAC is the successful commercialization of AgBio technologies through a license to an existing company or to a startup. As such, the text of your Proposal should focus on specific translational research objectives and deliverables that support the commercialization plan rather than just the technical details of the underlying discovery/technology. Our funding partner, the Michigan Strategic Fund [whose engagement is administered by the Michigan Economic Development Corporation (MEDC)] also emphasizes commercialization in Michigan as a desirable outcome. The MTRAC AgBio Program is open to investigators at institutions of higher education, non-profit research centers, and public hospital systems in Michigan.

There are two categories of MTRAC grant funding, Tier I grants (also referred to as MTRAC “Full” grants) and Tier II grants (also referred to as MTRAC “Starter” grants). Tier II Starter projects cover early-stage projects with direct cost budgets of up to $40K. They are intended to complete a short-term critical commercialization activity/step or provide enough data or other verification to facilitate the submission of a Tier I Full proposal or. Starter projects typically last about 6 months. MTRAC Full grants cover projects that last up to one year and allow for direct project cost budgets of up to $125K. Tier I Full grants are awarded on an annual basis and Tier II Starter grants are usually awarded twice per year. While researchers may receive one Starter grant and one Full grant to facilitate the effective translation of a qualified technology, prior receipt of a Starter grant is NOT required to apply for a Tier I Full grant. However, MTRAC awardees who have successfully completed previous award milestones (for example, under a Starter grant) often compete well for a subsequent grant. There may be times when there are simultaneous RFP’s for Starter and Full grant funding. **Concurrent proposals on the same topic are not allowed** (the second proposal received will not be accepted for review).

**Potential applicants are strongly encouraged to speak with the MTRAC AgBio Program office prior to Proposal submission** about the MTRAC AgBio Program requirements, expectations, and limitations which differ significantly from typical basic research funding sources. To do so, you may contact Joseph A. Affholter, MTRAC Commercialization Program Director, jaffholt@msu.edu (517-884-1824) or Weian Ou, MTRAC Program Manager, ouweian@msu.edu (517.884.1659).

Proposals for Tier I Full MTRAC AgBio projects must be submitted through the MTRAC application portal, and should include the cover page and summary, project description, and the completed Budget and Signature forms. The URL for application submission will be available by late September 2022 at <https://msu.smapply.io/> . **Proposals are due by 5pm EST on Wednesday, November 30, 2022.**

**MTRAC PROCESS OVERVIEW:** After verification of compliance and completeness, Proposals will be reviewed by the MTRAC AgBio program and the Oversight Committee. Finalists will be invited to make a presentation to the Oversight Committee at the final decision meeting on February 15th, 2023. Applicants MUST present an oral presentation of their Proposal at this meeting to be considered for funding. The Oversight Committee may require that certain defined contingencies be met before an award is made. There is the potential that there will be costs associated with meeting those contingencies. Applicants will be notified within about one week of the Oversight Committee decision and awarded funds will be made available to the selected projects as quickly as possible after necessary documents are executed and accounts are setup (likely no later than March 2022).

**PROPOSAL REVIEW & EVALUATION**: Proposals will be evaluated by the MTRAC Oversight Committee considering commercialization aspects such as probable economic impact and significance, potential for commercialization, the likelihood of successfully obtaining required support/funding to get the ultimate product or service on the market, etc. A weblink to the rubric that will be used for the initial evaluation of the proposals is available online at: <https://innovationcenter.msu.edu/wp-content/uploads/2020/12/MTRAC-AgBio-Hub-Reviewer-and-Team-Info-Packet_2018-Tier-I-FULL_1.pdf> and we strongly suggest that you review it and keep it in mind as you are preparing your Proposal (scientific merit to be a part of the technology/product review). Each Proposal must contain, and will also be evaluated upon, explicit deliverable quarterly milestones and proposed budget. It is important that the reviewers can understand how the proposed translational research activities/milestones fit within the proposed path-to-market and how that path facilitates the successful commercialization of the technology.

**ELIGIBILITY**: The MTRAC program was developed to fund translational research of novel, commercially viable technologies that will result in defined products or services that solve unmet market needs. Projects with limited commercial potential are outside of the mission of the MTRAC program and unlikely to be funded. The research must relate directly to applications in agriculture and/or biology (excluding human medicine)– broadly speaking, this includes the USDA definition of food, fuel, fiber, natural resource management and opportunities related to these, including veterinary medicine. It also explicitly includes bio-derived/bio-based materials, industrial biotechnology, and advanced (engineered) systems for monitoring, treating and/or producing plants, animals and genetic traits relevant to these. Technologies related *only* to human health are not eligible. The technology must be the subject of an Invention Disclosure at your institution of higher education, non-profit research center, or hospital system [*e.g.* the disclosure form for Michigan State University (MSU) can be found at: <http://www.technologies.msu.edu/researchers/disclose-invention>] and be under active management of your technology transfer office or equivalent (*e.g.* for Michigan State University this would be MSU Technologies <http://www.technologies.msu.edu/> ). Technologies included in an MTRAC Proposal must be available for licensing in the application/field-of-use of the Proposal and relevant geography(ies). Technologies under an option agreement in the applicable field-of-use and geography(ies) are eligible for inclusion in an MTRAC Proposal.

The technology should be at least at the proof-of-concept stage, as the MTRAC AgBio Program is not intended for basic research.

The applicant Principal Investigator (PI) must be from one of the following located in Michigan:

* Institution of higher education
	+ If at MSU and the PI does not have an appointment in the College of Natural Science, College of Engineering, College of Agriculture and Natural Resources, or the College of Veterinary Medicine, they must contact the MTRAC AgBio Program office about specific matching funding requirements.
* Non-profit research center
* Hospital system

It is **important to note** that the template for the Proposal plus the Budget and Signature Form (see below) include additional requirements related to matching funding, indirect cost limits, project management, etc. Additionally, the mechanism to provide funding to awardees outside of MSU is through a subaward agreement from MSU. The subaward agreement should be signed within one and a half (1.5) months of notification of award and receipt of the subcontract; otherwise, there is the potential for the award to be rescinded.

If you have any questions regarding eligibility, contact MTRAC Program Manager, Weian Ou

ouweian@msu.edu for assistance.

**CONFIDENTIAL INFORMATION:** Please note that the members of the Oversight Committee who will be reviewing the Proposals and making award decisions ARE NOT under any confidentiality agreements. Due to the nature of their work in venture capital, agricultural companies, etc., the majority of the Oversight Committee members would not be allowed to enter into these types of agreements. Therefore, do not include any confidential/proprietary information in your Proposal and do disclose all such information to your tech transfer office (*e.g.* MSUT at MSU). If intellectual property rights (*e.g.,* patent applications, copyright filings etc) related to the Proposal have not yet been claimed, it is advisable to work with your technology manager on the content of the Proposal to avoid public disclosure that could affect the ability to later file for intellectual property (IP) rights. One possible way to approach this is to focus discussion on ***what***the product or process does, rather than very specifically ***how*** it does it. As the objective of this program is commercialization, the Proposal should be focused toward the commercial and business opportunity rather than the underlying technical details. If you have any questions or concerns in this regard, please contact your technology manager at your organization.

**PROPOSAL:** To be accepted for review, the Proposal submission must include the following information according to the format provided and MUST not exceed the stated page limits. *Maintain at least 0.5 inch page margins and use type no smaller than Arial 10pt. font throughout all documents submitted.* When submitting your Proposal electronically, there will be two PDFs: one for the completed Budget and Signature Form and the other for all the other parts of the Proposal listed below.

It is important that the Proposal clearly articulate that there is a significant problem being solved utilizing the technology, that the solution is competitive (differentiated, has valuable benefits in comparison to other solutions, etc.) and commercially viable. The milestones/activities of the Proposal need to specifically facilitate commercialization of the technology to solve the problem. This is milestone driven translational research and commercialization vs. the NIH/NSF aim-driven research. Awardees will meet periodically with the MTRAC Commercialization Program Director and other stakeholders to discuss progress and get assistance. Additionally, all awardees are required to report periodically (usually quarterly) regarding milestone achievement and progress utilizing a template provided. These reports will sometimes be presented in-person to the MTRAC Oversight Committee.

1. **Cover Page and Summary (2 pages total not including the “other related funding” section) –** See Cover Page and Summary template at the end of this document.
Contains the project title, name of the PI, budget amount requested, tech transfer case/file number(s) with IP status (it is best to consult your technology manager for assistance completing this section), identification of related funding and differentiation of activities (other funded or to-be-funded activities should not be duplicative of the proposed MTRAC project but instead support other technology advancement activities as part of a full plan to achieve commercialization), plus a brief summary (one paragraph ideally) of the Proposal, and completed Market Summary table. Collaborator(s) name(s) are also included when applicable. If there are co-PIs, one needs to be designated as the primary contact.
2. **Project Description (6 pages total) –** *It is recommended that you use the following headings in the body of your Proposal; however, you must adhere to the total page limit (section lengths given in the section descriptions below are suggestions). Attachments such as letters of support or verification of matching resources are not included in the page count.* A weblink to the rubric that will be used for the initial evaluation of the proposals is available online at <http://innovationcenter.msu.edu/programs/msu-mtrac-program> and we strongly suggest that you review it and keep it in mind as you are preparing your Proposal.
* **Problem/Unmet Need and Solution –** What problem/unmet need are you solving? Why is it important? Has the need been a longstanding need, a recent but current need, or is it a future need? What is currently being done to address the need/problem? What is the commercial product or service you envision to solve that problem (the solution)? (1-2 paragraphs)
* **Technology Description and Stage of Development –** Describe the technology, stage of technology development, and translational vision for the technology relative to the envisioned commercial application. Include any feasibility or proof-of-principle results related to the commercial application. [Remember that MTRAC program is focused on translational research and designed to accelerate commercialization of promising technologies. Early stage research projects (*i.e.* hypothesis testing) will not be considered.] What are the competing or alternative technologies/products (even those still in development) and how does your solution compare to them? What benefits of your technology solution provide differentiation from the competition? (*Note that you may find it better to include the competitive information in the Market Opportunity section instead of in this section and that graphics are often a good vehicle to provide comparison information.)* (1/2 page)
* **Market Opportunity and Economic Impact**If successfully completed, how would the commercialization outcome of your technology address the unmet need? Who specifically would buy/benefit from the product or service (define the target market segment/customer)? What is the size of the market segment? Over what geography? Is the market segment growing in size and, if so, by how much and over what time period? Include any other relevant information regarding the trends or opportunities related to the target market (*e.g.* if the target market has not been growing but is expected to in the future, explain the factors that will cause this growth).

What are the competing or alternative technologies/products (even those still in development) and how does your solution compare to them? What benefits of your technology solution provide differentiation from the competition in the target market segment? (*Note that you may find it better to include the competitive information in the Technology Description section instead of in this section and that graphics are often a good vehicle to provide comparison information.)*

Explain the value proposition for the target customer. How large of an impact would your solution potentially make versus current practice (for example: our technology could create product X at a cost of $Y per kg versus current production costs of $Z per kg)? Describe feedback from, or any other engagement with, potential customers or licensees used to establish the target market segment, to define the desirable/needed product attributes, to verify the value proposition, and/or to develop the Path to Market along with the Overall Product Development Plan (this feedback is important information to include if available).**Important reminder: include references for all market data used in the Proposal*.*** (~1.5 pages)

* **Path to Market and Overall Product Development Plan/Roadmap** – The commercialization of the envisioned product or service is through which of these paths: a license to an existing company or to a start-up company *(reminder: MTRAC has a focus on MI-based companies*)? **Starting with the current stage of development for the technology, what are the high-level steps/goals for product development in the pathway to market including both the activities of this MTRAC Proposal and the intermediate steps from the end of an MTRAC grant to having marketable product/service?** Who will perform them? How will they be funded *(Note that you may find it best to include detailed information in the follow-on funding section instead of here)*? Identify the perceived barriers/impediments to commercialization that need to be addressed and include them in a clear feasible plan. If the commercialization path is through a license to an existing company, be sure to include what the company requires as sufficient de-risking before being willing to license the technology. If the commercialization path is through a license to a start-up, include the de-risking needed to enable the start-up to attract the necessary funding to license the technology and continue the development. Are there regulatory requirements? If so, what are they? What is the earliest likely timeframe that a product or service resulting from development of your technology could make it to market? The **following timeline table must be included** to convey much of the information in this section. (1 page)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TIME** | **….2022** | **…2023** |  |  | **Year X +** |
| Critical activities to complete |  |  |  |  |  |
| Who/Where | MSU |  |  |  | Licensee |
| Fund Source ($ amount if known) |  |  |  |  |  |
| Notes |  |  |  |  |  |

*Instructions on how to fill in the table as a Product Development Roadmap:*

1. *Record the current status in the first colored column*
2. *In the second to the last column, list what must be accomplished as sufficient de-risking for an existing company or start-up to engage as a licensee*
3. *Fill in the gap between the columns just completed with as many milestones/steps as necessary (adjust the time interval as needed)*
4. *List what the licensee will do to bring the product to market in the right-hand reddish-brown cell*
5. *Complete the bottom three rows if not already done. It is understood that this is an anticipated plan so you can show multiple possible funding sources and include notes about your assumptions. Remember to clearly include/note the activities of your MTRAC proposal.*
* **Quarterly Milestones** **for this Proposal** – List specific deliverable quarterly translational research milestones and a plan for achieving them (MTRAC Full award duration is typically 1 year). The milestones should align with the Path to Market, Overall Product Development Plan, and Budget. (1/2 page)
* **Collaboration** *(Include only if applicable)* **–** Who are the collaborators on this project (if any) and what are their roles? Are they contributing funding and/or in-kind resources? If so, a letter of support verifying any in-kind or contributed funds beyond the required match MUST be included as an attachment for the support to be considered in the Proposal evaluation. If they are providing the required matching funding for a non-MSU applicant (or MSU applicant outside of the MSU colleges listed in the Eligibility section above), they will need to sign the “Matching Funds Authorization” section of the Budget and Signature Form. If a collaborator is not employed as a direct report to the PI of the proposal, the collaborator’s signature is needed on the Budget and Signature Form. (1 paragraph)
* **Follow-On Funding –** Explain the plan for funding after MTRAC award(s). (e.g., trade association funding, foundations, MI First Capital Fund, SBIR/STTR, venture capital, angel funding, existing company licensee, etc.). This should be consistent with the Path to Market and Overall Product Development plan.

 (1 paragraph).

Note: It is important to describe/include in your Proposal any feedback from, or any other engagement with, potential customers or licensees used to determine the target market, to define the desirable/needed product attributes, to develop the path to commercialization, and/or determine the quarterly milestones for your Proposal.

1. **Budget and Signature Form – (no page limit; use number of pages needed to complete the Form).** Include a proposed budget (timeframe matching that of your proposed quarterly milestones) using the appropriate Budget and Signature Form **available online (see below for website). Be sure to use the correct form** – there is a separate MSU-only form so that proper approvals and calculations are obtained. The total direct cost budget cannot exceed $100K. Please note that there are separate columns on the form for expected in-state and out-of-state expenses. You have the flexibility to build the budget you feel you will need and you should only request the amount needed. Also, include a brief budget justification.

**Applicants of non-profit research center or hospital system will need to provide at least 50% of the total budget as matching funds. For applicants from an institution of higher education, the matching funds requirement is based upon research expenditures as reported through the Higher Education Research and Development (HERD) survey** [**https://ncsesdata.nsf.gov/ids/herd**](https://ncsesdata.nsf.gov/ids/herd)**:**

* + - >$150 Million – the match requirement will be at least **50%** of the proposed project budget
		- $50 Million - $150 Million – the match requirement will be at least **25%** of the proposed project budget
		- <$50 Million –whereas institutions of higher education that fall below $50 million in research expenditures, the match requirement will be **10%** of their proposed project budget

(for MSU applicants from the colleges listed in the Eligibility section above, this match will automatically be made internally utilizing funds already committed to MTRAC). These matching funds cannot originate from another MEDC (or Michigan Strategic Fund) funded program and must be cash rather than in-kind. **Additionally, non-MSU applications must include a non-technical project manager** whose activities include budget and milestone management, interfacing with the MTRAC AgBio Program personnel and MEDC for all necessary reporting and providing commercialization support. Signatures on the Budget and Signature Form for non-MSU applicants are required related to the funding match, technology management, and project management. *Note: Collaborators who are not employed as a direct report to the PI on the proposal must sign the Budget and Signature Form as a collaborator. If they are providing the required matching funding, they will also need to sign the “Matching Funds Authorization” section of the Budget and Signature Form.*

***The Budget and Signature Forms are available online at https://innovationcenter.msu.edu/tech-transfer-commercialization/programs-and-resources/mtrac-awards/agbio-full-award-application/. Be sure to select the correct version of the Form*** *(there is one for MSU-Only).*  ***The correct Budget and Signature Form must be used/completed and submitted as part of your Proposal.***

***Please note the following related to your budget:***

* The maximum allowable indirect charge is 15% of the requested funds.
* All of the funds are to be used to advance the goals of the project per the translational research milestones in the Proposal.
* Allowable budget expenditures include: salary and fringe benefits for project personnel (important to justify any PI salary included as this is generally not viewed favorably/allowed by reviewers), materials and supplies, contract research (if required), outside contractors, equipment (budget cannot be used to pay for computers/laptops), limited travel (important to justify the need – see last bullet below), and other relevant costs. Budgets should be primarily allocated to conducting translational research and achievement of milestones. During the funding decision, the appropriateness of the proposed project budget is reviewed.
* **Student tuition is not an allowable expense**. Neither are costs for construction or renovation. Additionally, the awarded funds cannot be utilized for filing, prosecution, or other costs associated with patents, copyright, or trademarks.
* Legal fees and start-up costs are not allowable expenses
* For expenses to hire out-of-state consultants specific to project milestones, a formal request needs to be made to and supported by the MEDC apart from the Oversight Committee funding decision.
* For items not directly related to achievement of the project goals, such as travel to conferences, a full and complete justification regarding relevancy to the project need to be provided. *Note: documentation of the goal and outcome relevant to the project will be required for any approved travel expenses*.

**4.** (if applicable) **References/Literature Cited (no page limit)**

1. **Biosketches (2 pages each) –** Biosketches of the PI and other key personnel should be included in the Proposal.
2. (if applicable) **Letters of Support and Verification** **of Contribution (no page limit).** Include substantive letters of support from collaborators, potential commercialization partners, etc. Any pledged in-kind support must also be verified by inclusion of a signed letter on appropriate letterhead. For any non-MSU applicants (or MSU applicants outside of the colleges listed in the Eligibility section above), the required financial support as matching funds requires an authorized verification signature on the Budget and Signature Form; however, an additional letter further explaining and/or confirming the match can be included. If additional funds beyond the required match are being supplied, these need to be described relative to amount and purpose in a letter on appropriate letterhead in order to be considered in the Proposal evaluation. *Note: Collaborators who are not employed as a direct report to the PI on the proposal must sign the Budget and Signature Form as a collaborator. If they are providing the required matching funding, they will also need to sign the “Matching Funds Authorization” section of the Budget and Signature Form.*

MTRAC AgBio Program– Tier I Full Proposal (due Nov. 2022)

**Project Title**

Name:

Institution or Organization:

Department:

Email address:

Phone:

**PI Name and Contact Information**

**Other Collaborators and their Affiliation**

**Total Proposal Budget Amount**

**Technology and Intellectual Property (IP) -** please complete table below**:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  **Tech Transfer File Number** | **Type of IP** Patent, Copyright, or Trade Secret | **Type of Patent Filing & Title**(None, Provisional, US Application, PCT, etc.) | **Filing Date(s) if applicable and IP not yet issued**  | **Issued Patent Number(s) if applicable**  |
|  |  |  |  |  |
|  |  |  |  |  |

Name:

Title:

Email and Phone:

**Technology Manager and Contact Information**

**Other Related Funding:** 1) Identify both current and pending funding including the source, amount, and duration, 2) Differentiate the activities of the other funding from the proposed MTRAC funding as part of an overall commercialization plan, and 3) List any previous funding related to the proposed project from MSU (e.g. TSGTD) and Michigan (e.g. MTRAC, Advance Proof-of-Concept, etc.) including source, amount, duration, and use.

**Brief Summary of the Proposal**

**Market Summary**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Definition/Description | Size in US Dollars/Year | Geography | Growth *(past trend or anticipated)* | Reference/Source of Information |
| Total Market |  |  |  |  |  |
| Target Market *(Market Segment to be addressed)* |  |  |  |  |  |