Technology Maturation Award from the GW Technology Commercialization Office

The Technology Maturation Award (TMA) offers the opportunity to increase the marketability of technologies already marketed by the George Washington University (GW) Technology Commercialization Office (TCO) for their promising commercial potential and societal impact. TMA supports commercial potential demonstration projects for academic research outputs in any science and engineering discipline. This demonstration is achieved through proof-of-concept, prototyping, technology development and/or scale-up work. Successful TMA projects generate technology validation necessary to attract experienced licensees.

Type of Award: Grant or Continuing Grant

Estimated Number of Awards: 4

TMA projects will be funded for up to $50,000 for 6-12 months per award.

Who May Submit Proposals: Proposals may only be submitted by GW faculty inventors with a GW-owned invention available for licensing. **If you have a new idea, disclose it to TCO before applying for this award.**

Limit on Number of Proposals per PI or Co-PI: 2.

Deadline: Rolling submission through March 1, 2024.

Proposal Preparation Instructions

Submit to tco@gwu.edu or to your licensing manager per below.

Life Science – Sarwat Naz

Physical Science – Michael Harpen

ELEMENTS OF A TMA PROJECT

All TMA proposals must address the following 3 elements:

Technology Development

Demonstration of Commercialization Potential

Partnerships

Technology Development

The translation of basic research outputs into products, services and new jobs that benefit people's lives is often depicted as a sequence of phases that range from basic research to proof-of-concept, prototype iteration and product development to commercialization. While this sequence of phases may not always occur in a linear fashion and each phase presents a unique set of challenges, the knowledge gained in each phase is necessary to move discoveries out of the lab and into the market. The TMA program is designed to advance knowledge along this continuum for GW TCO supported inventions. The proposed applied research project should identify knowledge gap(s) that must be addressed to advance the technology toward commercialization. A successful TMA project will generate measurable outcomes such as a proof-of-concept or an early prototype to meet an identified market need and inform the next phase towards

commercialization. At the end of the project, there should be new knowledge (Intellectual Merit) to solve a significant technical challenge and move the technology closer toward commercialization and societal benefit (Broader Impact).

Demonstration of Commercialization Potential

A successful TMA proposal will demonstrate an initial understanding of the commercial aspects of translating the innovation toward a market application, such as: market need, target industry sector, product-market fit, value proposition, the target customer, sales and distribution channels, supply-chain, preliminary intellectual property strategy (freedom to operate, patentability, copyright, trade secret, etc. as applicable), regulatory hurdles, etc. It is important to note that a successful proposal must demonstrate both initial research results and an initial understanding of the target market segment. The proposal must present evidence of prior research or customer discovery results and discuss how these prior results inform the proposed technology translation project, and how the applied research plan supports the ultimate commercialization goals.

Partnerships

Partnerships with third parties can be an important component of the TMA program and are intended to accelerate the proposed technology development towards its commercialization. The TMA program provides an opportunity for funding of translational data that may not be supported by federal grants, such as toxicology and PK/PD studies, batch manufacturing, or prototype design/fabrication. Any substantial collaboration with individuals/entities not included in the budget should be described in the Facilities, Equipment and Other Resources section of the proposal.

The proposal consists of the following parts:

Cover Sheet to include Title of Proposal, Name of Principal Investigator, GW Tech ID for related GW invention, name of Licensing Manager managing the GW invention, date of proposal, and that it is a Technology Maturation Award submission. Identify on the Cover Sheet whether (YES/NO) any participants have a financial or other conflict of interest.

Project Description (cannot exceed 5 pages)

The project description must include the following sections in the order specified. The bullet points in each section are suggestions for the information to be discussed and are provided as a guide. Adjustments in exact content and length of each section (with the exception of the Executive Summary) are allowable as necessary for the PI to clearly present her/his ideas.

Executive Summary (no more than a half page)

The executive summary should provide a brief overview of the entire project.

The Societal Need and the Customer. Describe the societal need to be addressed through commercialization. Describe the expected customer for the innovation. What customer needs and market pain points are you addressing?

The Value Proposition. Define the value proposition in 50 words or less: What is the potential societal value of your innovation? What are the benefits to the customer of your proposed innovation? What is the key differentiator of your organization or technology?

The Innovation: Succinctly describe your innovation. This section can contain proprietary information that could not be discussed in the Project Summary. What aspects are original, unusual, novel, disruptive or transformative compared to the current state of the art?

Partnership: Describe the nature and merits of any collaboration with industrial and/or research partners.

From Basic Research to Addressing a Market Opportunity (suggested length: 1 pages)

GW Invention: Describe the relevant data/results from the prior GW invention disclosure. **If you don't have a prior GW invention disclosure, make a disclosure to TCO first, before proceeding.** Summarize the intellectual merit and broader impact of the prior research results. These results should provide the reviewers with evidence that the technology is ready to move beyond the fundamental research/discovery phase and that the translational research proposed has potential to be developed into technology and commercialized.

Identify the status of your patent applications. Type filed, when, any granted, when?

Describe the Intellectual Merit of the proposed product, process or service. Describe its broader impacts in terms of societal, economic and commercial benefit.

What is the target market segment addressed by the proposed innovation? How is it informed by any preliminary market research or customer discovery? How will the innovation address the unmet market need?

What are the existing competitive technologies, and what are their shortcomings? What are the key differentiators of the proposed technology vs. the current state of the art and other competing technologies? What proposed features will make it competitive? How is this beneficial to a potential customer / end user? What proposed features might keep potential competitors from circumventing the technology?

Intellectual Property (IP). Discuss the IP landscape. Include elements such as results of a preliminary patent search, IP status (e.g. invention disclosure, preliminary patent application, patent granted, etc.), and the feasibility of obtaining needed licenses and/or sufficient protection for the IP developed. Discuss to the extent possible freedom to operate and blocking IP issues.

Technical Challenges and Applied Research Plan (suggested length: 1.5 pages)

Describe the knowledge gaps and technical barriers that must be overcome to translate your technology into a product, process or service. What are the most challenging hurdles and why? Describe the envisioned next steps for successful development of the technology toward commercialization and societal use.

Describe the applied research plan to address the knowledge gaps and technical barriers. What are the specific R&D objectives and tasks/activities that will need to be undertaken to close the knowledge and technical barriers gaps so that the proof-of-concept, prototype or technology scale-up can be demonstrated?

Who will be assigned to the identified research tasks?

Define the success metrics needed to assess the progress of the proposed project. Include a discussion of the choice and appropriateness of the stated success metrics.

Provide a risk assessment and mitigation plan to address the failure of any of your R&D objectives, tasks or success metrics.

Provide a milestone chart that identifies the critical milestones to be reached along a technology/product development timeline.

Achieving Societal Impact through the Realization of Commercial Potential (1 pages)

Describe the overall future commercialization strategy and plans envisioned going beyond the duration of the proposed project. These will guide the sustainability of the commercialization efforts during, and especially after, the implementation of the research activities. The strategic plan should be aimed at identifying and securing strategic commercialization partners, investors, licensees, the creation and funding of spin-out companies, etc.

Propose an assessment plan that will help gauge the success of the research partnership(s) and third-party collaboration(s) in more rapidly translating academic research and technologies into commercial use.

Project Team (suggested length: half page)

Describe the team members and the qualifications they bring to the project. Are there partners and/or collaborators outside of the proposing organization? If so, describe their role and the value they add to the project in the Partnerships section.

Describe the qualifications and motivation of the masters, PhD student(s) or postdoctoral researchers selected for the project. If a student or postdoctoral researcher has not been identified, describe the selection process you will use to recruit her/him.

Partnerships (suggested length: half page)

Describe any partnership/vender that is being assembled/hired to pursue the applied research project. Discuss the capabilities of each of the partners and their roles in the project.

How will the proposed partnership achieve the goals of the TMA project to a) catalyze and accelerate technology development toward commercialization?

Provide an assessment plan that will help gauge the success of the research partnership(s) and third-party collaboration(s). Discuss your choice of the stated success metrics.

Marking Proprietary Information

Patentable ideas, trade secrets, privileged or confidential commercial or financial information, disclosure of which may harm the proposer, should be included in proposals only when such information is necessary to convey an understanding of the proposed project. Such information must be clearly marked in the proposal and be appropriately labeled with a legend such as, "The following is (proprietary or confidential) information that we request not be released to persons outside GW, except for purposes of review and evaluation." Typically, proprietary information is marked in the text either with an asterisk at the beginning and end of the proprietary paragraph, underlining the proprietary sections, or choosing a different font type. An entire proposal should not be marked proprietary. *Note on the cover sheet if the application contains any proprietary information.*

References Cited

Provide a list of relevant reference sources. If there are no references cited in the proposal, include a statement to that effect in this module.

Biographical Sketches

All participants listed as either PI, co-PIs or "Senior Personnel" must submit a biographical sketch of **no more than two pages**. Include short bios (two pages maximum) of your graduate students and postdoctoral researchers (if known) and other key personnel. Highlight the participants' technical expertise and track record in technology development and/or commercialization.

Budgets

Enter a Proposal Budget. A budget justification is required for each non-zero item in the budget; it should explicitly state why the funds are needed as well as how and where the requested funds will be spent.

Funding requests will be evaluated relative to the scope and balance of the planned research.

Current and Pending Support

The proposal should provide information regarding all research to which the PI and co-PIs(s) and other senior personnel either have committed or have planned to commit time. For all ongoing or proposed projects, the following information should be provided for the PI, co-PI(s), and senior personnel:

Name of sponsoring organization and award number; Title and performance period of the award/proposal; and

Person-months/calendar months (per year) devoted to the project by the PI, co-PI(s), and each of the senior personnel.

Facilities, Equipment, and Other Resources

Describe the availability of facilities, equipment, and other resources required for the proposed project. Describe the measures that will be taken to ensure compliance with applicable Environmental Health and Safety laws in the execution of the proposed work if awarded. This section of the proposal is used to assess the adequacy of the resources available to perform the effort proposed to satisfy the Intellectual Merit and Broader Impacts review criteria. Proposers should describe only those resources that are directly applicable. Proposers should include an aggregated description of the internal and external resources (both physical and personnel) that the organization and its collaborators will provide to the project, should it be funded. Such information must be provided in this section, in lieu of other parts of the proposal (e.g., Budget Justification, Project Description). The description should be narrative in nature and must not include any quantifiable financial information.

Supplementary Documents

Letters of Collaboration & Commitment for Cooperative Research Agreement: Collaborators are individuals or entities that work with the PI and her/his team to provide additional value to the project and may be paid or unpaid. Whether or not the collaborator is included in the budget, a letter of collaboration from each named participating entity must be provided at the time of submission of the proposal. Such letters must appear on the entity's letterhead and be signed by the appropriate representative of the entity/organization. The letter(s) must describe the nature of the collaboration and how the collaboration brings additional value to the project. It is the responsibility of the submitting organization to discuss the appropriate intellectual property policies, including patent disclosures and filings, with research partners. GW is not responsible for the type of agreement reached between grantees and industrial/research partners.

Resubmission Change Description (if applicable;1-page maximum): A declined proposal may be resubmitted, but only after it has undergone substantial revision. A resubmitted proposal that has not clearly considered the major comments or concerns resulting from the prior GW review may be returned without review. A resubmission must include a 1 page supplemental document that includes the previous proposal number, a summary of the GW reviewers' comments and the PI's response to those comments. The revised proposal will be subject to a new merit review.

Human Subjects Documentation (if applicable): Projects involving research with human subjects must ensure that subjects are protected from research risks in conformance with the relevant Federal policy known as the Common Rule (Federal Policy for the Protection of Human Subjects, 45 CFR 690). All projects involving human subjects must either (1) have approval from an Institutional Review Board (IRB) before issuance of an award; or, (2) must affirm that the IRB has declared the research exempt from IRB review, in accordance with the applicable subsection, as established in section 101(b) of the Common Rule.

Vertebrate Animals Documentation (if applicable): Any project proposing use of vertebrate animals for research or education shall comply with the Animal Welfare Act (7 USC 2131, et seq.) and the regulations promulgated thereunder by the Secretary of Agriculture (9 CFR 1.1-4.11) pertaining to the humane care, handling, and treatment of vertebrate animals held or used for research, teaching or other activities supported by Federal awards. In accordance with these requirements, proposed projects involving use of any vertebrate animal for research or education must be approved by the submitting organization's Institutional Animal Care and Use Committee (IACUC) before an award can be made.

Conflicts of Interest (if applicable): Any proposal for which PI or other participants have financial or other conflict of interest should be accompanied by identification of the conflict(s) and a conflict of interest management plan. Any necessary GW approvals of the conflict of interest management plan are required prior to award of the TMA.

TMA PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by GW TCO are assigned to the appropriate licensing associate for acknowledgement and, if they meet requirements, for review. All proposals are carefully reviewed by a scientific, engineering, and/or business expert, and usually by three to ten other persons outside GW either as ad hoc reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by GW TCO. Care is taken to ensure that reviewers have no conflicts of interest with the proposal.

Merit Review

GW TCO makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

Merit Review Criteria

The two merit review criteria are listed below. Both criteria are to be given full consideration during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria.

When evaluating TMA proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. To that end, reviewers will be asked to evaluate all proposals against the following criteria:

What is the potential to advance knowledge?

What is the potential to benefit society and contribute to the achievement of specific, desired societal outcomes?

Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?

How well qualified is the individual, team, or organization to conduct the proposed activities?

Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

GW Invention Requirement: The merits of the prior research and/or customer discovery results. To what extent do they support the assertion that the technology is ready to move beyond the basic research phase, and that the translational research proposed has the potential to be successful?

The strength of the discussion of the market/societal need and how the innovation has the potential to offer a competitive solution or competitive advantage.

The quality of the discussion about the Intellectual Property landscape.

The demonstrated understanding of the technology barriers or knowledge gaps.

The merits of the proposed translational research to overcome the identified technological hurdles and knowledge gaps.

The quality of the strategy for a path toward commercialization.

The reasonableness of the budget and budget justification that indicate how and where the requested funds will be spent. Note, if there is an insignificant research component (i.e., most of the work is to generate a business plan or to understand market need), the proposal may be returned without review.

Additional Review Criteria for Evaluating Partnerships:

The merits and appropriateness of the proposed partnership, and its role in catalyzing the technical, commercialization and educational objectives of the project.

The commitment of the proposed partners in reaching the stated goals of the proposal.

The commitment of the Industrial Partner to the commercialization of the technology beyond the term of the TMA award.

Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by panel.

Reviewers will be asked to evaluate proposals using the above criteria. A summary rating and accompanying narrative will generally be completed and submitted by each reviewer and/or panel.

GW TCO strives to be able to tell applicants whether their proposals have been declined or recommended for funding within two months. Large or particularly complex proposals or proposals from new awardees may require additional review and processing time. The time interval begins on the deadline.

PROGRESS REPORT REQUIRED - Recipients are required to submit a brief grant report no later than 30 days after the end of the award that includes identified products (manuscripts, creations, etc.) and specific plans/activities for obtaining additional research and development funding and for licensing to a company. Progress Reports will be submitted by email to your TCO licensing associate.

Formatting Guidelines

- **Margins:** Set at 0.5" or greater
- **Font:** Arial or similar font
- **Font Size:** 11 or larger (A smaller font size may be used for figures, graphs, diagrams, charts, tables, figure legends and footnotes but it must be readily legible.)
- **Headers/Footers:** No information should appear in the side margins or in the header. The footer should read PI LAST NAME, FIRST NAME, Page #.
- **Spacing:** The application must be single-spaced
- **Page Limits:** Full proposals are not to exceed 10.5 pages (including 1st Biosketch, but not including additional Biosketches, References Cited and Supplementary Documents)

Proposal Component	**Maximum Page Allowance**
Cover Page	**1.0**

Project Description	**5.0**
- Executive Summary	(0.5)
- From Basic Research to Addressing a Market Opportunity	(1.0)
- Technical Challenges and Applied Research Plan	(1.5)
- Achieving Societal Impact through the Realization of Commercial Potential	(0.5)
- Project Team	(0.5)
- Partnerships	(0.5)
References Cited	no limit
Biographical Sketches	**2.0 each**
Budget	**1.0**
Current and Pending Support	**1.0**
Facilities, Equipment, and Other Resources	**0.5**
Supplementary Documents (as needed)	
- Letters of Collaboration & Commitment for Cooperative Research Agreement	no limit
- Resubmission Change Description (if applicable)	1.0
- Human Subjects Documentation (if applicable)	1.0
- Conflicts of Interest & Management Plan (if applicable)	no limit
TOTAL for Required Sections	**10.5 (inc. 1st biosketch)**