



ATP-BIO Y5 STAKEHOLDER INSPIRED RESEARCH PROGRAM - SIRP

Funding Period: 9/1/2024 - 8/31/2025. Due date: 4/23/2024.

BACKGROUND

ATP-Bio is an NSF Engineering Research Center leading the field of biopreservation by synergizing the expertise of 6 world-class research institutions (UMN, MGH, UCB, UCR, TAMU and CMU). Its vision is “Preserving living systems for all”, thereby allowing living products to be readily available across the globe to advance healthcare, biodiversity, and food supply and sustainability. Along with the crucial advancement of biopreservation research, ATP-Bio’s other mission is to train a diverse workforce through its Engineering Workforce Development (EWD) and Diversity and Culture of Inclusion (DCI) pillars. It also aims to connect resources and partnerships to ethically translate technologies for storage and distribution of living biological systems through its Innovation Ecosystem (IE) and Ethics and Public Policy pillars (EPP).

The technological barriers to biopreservation by cooling (mostly to subzero temperatures) and rewarming (to normal biological temperatures) are essentially the same for all living systems and can be summarized as unwanted ice formation, toxicity of cryoprotective agents (CPAs), and thermal and mechanical stress. Three research thrust areas (Biological Engineering, Multi-scale Thermodynamics of Water, and Fast and Uniform Rewarming) have been identified to overcome these barriers. The technological advances developed in these thrust areas are tested on a diverse spectrum of living systems grouped in four testbeds: cells, microphysiological systems and tissues, whole organs, and organisms.

CALL FOR PROPOSALS

The center is looking to fund two new SIRP projects through a competitive procedure for Year 5 at a level of **\$20,000 per year. These projects are expected to tackle use-inspired, translational research topics and areas from industry and other stakeholders** (see below). ATP-Bio researchers and trainees are eligible to apply (investigators of UMN and MGH are not eligible to lead projects but can participate in projects led by the other institutions.)

PROPOSAL TIMELINE

March 6, 2024	Issue proposal call
April 23, 2024	Proposal submission deadline
May 20, 2024	Awardees are notified and funded projects are announced
September 1, 2024	Projects begin; funding is issued through Y5 subawards

A template for the proposal is provided at the end of the document. Applicants should submit their proposals by the deadline through this [ONLINE APPLICATION](#).

POLICIES

All proposals will be reviewed by a committee selected amongst ATP-Bio stakeholders and ATP-Bio leadership. Awards will be made on the basis of the review committee recommendations, a balanced research portfolio, programmatic needs, quality and content of the translational technology, and other

ATP-Bio priorities. The program has \$50,000 and expects to award at least two projects. The awarded projects will receive up to one year of funding capped at \$20,000 direct (indirect costs will be added to the allocation). The awarded projects will be required to (i) present their progress in person at the site visit and /or annual meeting, (ii) present their progress at an IAB meeting, (iii) write a quad chart and research brief in the IE section of the annual report , (iv) provide a final report including a post-project plan at the end of the funding period, (v) possible IP disclosure and / or licensing plan.

Any residual funding in excess of 15% of the original total budget will be applied to future funding or will be returned unless approved by ATP-Bio Director.

LIST OF USE- INSPIRED, TRANSLATIONAL RESEARCH TOPICS AND AREAS FROM INDUSTRY AND OTHER STAKEHOLDERS

There are three areas of interest for this RFP:

Cryopreservation in the beef and cultured food industry:

Exploration of cryopreservation technology applications for traditional, cultured or alternative frozen meat products to better preserve nutrient quality, extend shelf life, and reduce food waste to identify technologies/processes that could eventually apply to segments, if not all, of the cold-chain industry

- Traditional meat product cryopreservation
- Cultured or alternative meat product cryopreservation

Pancreas Islet cells for transplantation:

Consider implications in transplant and ways to partner with ATP-Bio member partners.

- Practical tools to increase pancreas utilization and transplant. Must be research around the procedure/intervention of islet transplantation

Development of novel vitrification solution for oocytes and embryos:

Vitrification CPA development

- Development of solutions with reduced toxicity
- Protein-free formulations

New technologies for the preservation of regional endangered flora:

Broad approaches to biodiversity preservation

- Consider all preservation technologies and broad societal and practical impacts
- Including computational approaches

PROPOSAL TEMPLATE (2 page limit including figures, at least 11pt and 1" margins)

Project Title:

Applicant (role, institution):

1. PROJECT DESCRIPTION

A. Research Team

- *Provide the institutional affiliation, role, and relevant background and expertise of the team.*
- *Provide the information of any ATP-Bio Partners or other external collaborators.*

B. Description and explanation of research goals and approach (Major section)

- *Describe the use-inspired, translational research topic you are addressing.*
- *Discuss the current state-of-the-art and its limitations.*
- *Describe your research plan to address the limitations and its innovative aspects.*
- *If available, report any supporting preliminary results and deliverables.*

C. Brief timeline of major milestones and deliverables

D. Integration with other ATP-Bio pillars

- *Describe any contribution and/or engagement with other ATP-Bio pillars: EWD, DCI, IE, and EPP*

E. Broader & societal impacts

- *If the research is successful, what are the long-term impacts on society? Pick one in DCI, IE, EPP etc..*

2. COMMERCIALIZATION POTENTIAL:

- *Using the [TRL](#) chart, determine:*
 - *What TRL is the idea now?*
 - *What is the expected TRL upon completion of the project?*
- *Describe potential application areas and the market needs the technology addresses. Describe the commercialization pathway(s) for the project, including what industry or other partners will be important for commercialization.*
- *Describe the plan for disclosures and IP creation.*

3. PLAN FOR EXTERNAL FUNDING

- *Is there any current external funding?*
- *What is the external funding strategy for continuation of the project?*

4. REFERENCES

- *Include patents, citations, and other published literature.*

5. BUDGET & JUSTIFICATION

- *Include a simple budget and justification articulating the allocation to functional expenditures.*

6. ADDITIONAL:

- *If the project is approved, the following items will be requested: a formal institutionally approved budget, an agreement of ATP-Bio's IP policy, and the [ATP-Bio Non-Binding Project Awardee MOA](#).*
- *If approved, the project is expected to meet all expectations described in the policies.*