



ATP-BIO REQUEST FOR PROPOSALS 002 / STAKEHOLDER INSPIRED RESEARCH PROGRAM - SIRP

Funding Period: 9/1/2023 - 8/31/2024. Due date: 4/3/2023.

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 to “suspend biological time”, 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 new **research projects through a competitive procedure for year 3. 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.

PROPOSAL TIMELINE

March 6, 2023	Issue proposal call
April 3, 2023	Proposal submission deadline
May 1, 2023	Awardees are notified and funded projects are announced
September 1, 2023	Projects begin

A template for the proposal is provided at the end of the document. Applicants should submit their proposals by the deadline through an online application process.

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 \$100,000 and expects to award at least two projects. The awarded projects will receive up to one year of funding capped at \$50,000 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:

Container Technologies for Advanced Systems in Cryopreservation:

Consider implications across all test beds in the following.

- Containers and closures for all temperatures and processes of cooling and rewarming biological materials
- Transport and Storage of biological materials

Controlling the Fate and Phase of Water Using Engineered Molecules or Approaches:

Broad application of Ice Recrystallization Inhibitors or other engineered molecules or approaches to control the crystallization of water.

- Concepts across all temperature ranges
- Concepts across all testbeds

Rewarming of Organs from (Large) Animal Models:

Apply rewarming technology to successfully preserved organ models (to validate scale up).

- High subzero organ case
- Low subzero organ case

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.*