opnMe by Boehringer Ingelheim

In vitro models for acute MI/HF translation

Using novel systems, how would you propose to bridge the translational gap between current rodent models and clinical outcomes in acute myocardial infarction and ischemic heart failure?

Answers to this question including a proposal for collaboration can only be considered if they arrive no later than June 1, 2026, 11:59 pm PST.

Boehringer Ingelheim

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What is the context of the problem that we would like to solve?

Despite significant advances in cardiovascular research, there is currently no scalable and reproducible human multicellular *in vitro* model that recapitulates the complex pathophysiology of ischemic heart injury. This gap represents a major barrier to translating mechanistic insight into effective therapies.

To date, rodent models have provided important mechanistic insights into myocardial infarction (MI) and subsequent cardiac remodeling. However, fundamental species differences exist, particularly the fact that inflammatory, reparative, and remodeling phases are highly compressed in rodents occurring over days to a few weeks, whereas in humans these processes evolve over weeks to months. As a result, rodent models fail to capture critical temporal, cellular, and molecular features that shape human disease progression.

These limitations explain the low translatability of these preclinical findings and the subsequent failure of human clinical trials. Consequently, there is a strong unmet need for human multicellular systems that enable therapeutic intervention studies, establish a meaningful connection between human disease and preclinical observations, and increase confidence in findings derived from rodent studies.

Therefore, we are seeking an advanced, scalable, and reproducible human multicellular platform that can mimic ischemic conditions and reproduce key pathological features of myocardial infarction, including hypoxia-driven injury, inflammatory responses, fibrotic remodeling, and functional impairment. Ultimately, such models should enable comprehensive testing and characterization of therapeutic strategies aimed at preserving and/or improving cardiac function while limiting cardiac damage.

What potential solutions could be in scope?

- Innovative models reflecting biology and pathology of acute MI and/or ischemic cardiac injury
- Proposals using novel/advanced multicellular approaches (e.g. organoids, organ-on-a-chip, human tissue, tissue engineering, tissue slices, etc.)
- Proposals using (*but not limited to*) human cardiac myocytes, cardiac fibroblasts, cardiac endothelial cells, and immune cells
- Human primary and/or human iPSC-derived models
- Integration of functional readouts (e.g., contractility, electrophysiology, calcium handling, imaging, fibrosis, etc.) to assess injury and therapeutic response
- Models that would allow the validation of relevant biomarkers prognostic of the disease stage would strengthen the proposal
- Models which link clinical outcomes to predictive preclinical models or vice versa would also strengthen the proposal

What potential solutions would be out of scope?

- Models of cardiomyopathy and arrhythmias
- Genetic models and genome-editing
- Non-human in vitro models
- Human 2D-systems (mono/co-cultures)
- Approaches solely based on computational models

What benefits do we offer to you in exchange for having submitted a solution?

If your project is selected, you will have the opportunity to directly collaborate with the CardioRenalMetabolic Diseases Research Team of Boehringer Ingelheim. You can expect appropriate funding for the prospective collaboration period. Your exact funding request should be outlined in your proposal. As a framework, we suggest that your funding request be structured in milestones and not exceed 300,000 euros per submitted project in total. Please note that depending on the complexity and maturity of a proposed model and the degree of validation, different budget terms could be negotiated with you.

Our collaboration agreement will provide full transparency about each partner's rights & obligations (including intellectual property rights). As part of the agreement, you will be encouraged to publish following the collaboration agreement (to be negotiated in good faith).

What are the key success criteria on which we base our selection for the best answer?

We are seeking research collaboration proposals that contain:

- A well-structured proposal outlining a novel humanized multicellular model for acute MI and/or ischemic heart failure with existing initial functional data and/or publications.
- Any form of preliminary validation and/or the provision of relevant omics data would strengthen the proposal.
- Your exact funding request should be outlined in your proposal. The project should be structured in milestones and planned with key decision points (clear Go/No-Go criteria). The funding request for the initial milestones resulting in a Go/No-Go decision should not exceed 300,000 euros per submitted project in total. Depending on the complexity and maturity of a proposed model and the degree of validation, different budget terms could be negotiated with the selected partner(s).
- Proven track record in the required field of expertise.
- Ability to implement the outlined solution as part of a scientific collaboration project with Boehringer Ingelheim including access to a wet laboratory.

- Openness to transfer the established assay/model system to Boehringer Ingelheim's laboratories.
- Proposals that lead to a fully established model including validation within two years will be prioritized.

What information should be included in your answer submission?

Please use our answer submission template to provide a 2–3 page non-confidential proposal (available for download on the following site).

If confidential data exists that would strengthen the proposal, please indicate that information is available to share under a Confidential Disclosure Agreement (CDA). If we find the non-confidential concept proposal sufficiently interesting, we will execute a CDA for confidential discussions.

Anticipated Project Phases or Project Plan

Phase 1	Please complete your submission by **June 1, 2026, 11:59 pm PST at** the very latest.
Phase 2	Our review of all proposals will be completed by beginning of August, and scientists will be informed after that.
Phase 3	Start of discussions for the collaboration agreement in Q3/2026.

Submitting a collaboration proposal

- Check the outline of the opn2EXPERTS "*In vitro* models for acute MI/HF translation" on opnMe.
- Alternatively, you may click the "Get Submission Template" banner to access the collaboration proposal template.
- Follow the instructions to upload your submission document (requires login or registration).
- The upload allows you to attach additional application files if desired.
- You will be able to access your final submitted collaboration proposal in your personal dashboard and follow its review status.
- Please also visit the FAQ section on opnMe to learn more about our opn2EXPERTS program.