opnMe by Boehringer Ingelheim

Discovery of human myeloid/stromal biomarkers

Using novel primary human culture models, how would you propose to investigate molecular mechanisms underlying myeloid/stromal interaction in solid tumors with the goal of identifying actionable translational biomarkers?

Answers to this question including a proposal for collaboration can only be considered if they arrive no later than June 12, 2025, 11:59 pm PST.

Boehringer Ingelheim

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

Translational oncology aims to bridge the gap between basic science discoveries and their application in clinical settings. By combining insights from basic research with clinical observations, translational biology plays a crucial role in advancing medical knowledge and accelerating the development and implementation of effective cancer treatments.

Model systems that capture the diverse components in the tumor microenvironment (TME) are critical for developing new cancer therapies, identifying actionable, translational biomarkers, and improving treatment outcomes. We are seeking a collaboration to develop novel primary human *in vitro/ex vivo* solid tumor-like models with translational biomarker readouts for oncology therapies.

In general, actionable translational biomarkers that are of interest for this collaboration may include any measurable biological change in the proposed preclinical model system that can be linked to the activity of a therapeutic concept in human patients:

- Target engagement biomarkers: may be related to direct or indirect target engagement. Direct target engagement biomarkers are used to demonstrate that the applied drug binds directly to the desired target, like binding or displacement assays. Indirect target engagement biomarkers may be related to downstream signaling events linked to the binding of the drug to the target, like receptor internalization, protein phosphorylation (e.g. pSTATs) or cytokine secretion.
- Mode of action-related biomarkers: may be used to demonstrate an anti-tumor response (e.g. tumor cell apoptosis) or (anti-tumor) immune cell activation (e.g. CD8 T cell infiltration/activation).
- Patient selection biomarkers: may be treatment-related and may be used to predict a better response to a given treatment for potential model (patient) selection, like target expression correlations with efficacy.

Our goal is to find partner(s) that can propose (a) the right models with a clear link to biomarker translation and (b) has the capacity to collaborate with us for low throughput screening of available Boehringer materials and/or commercially available materials to confirm functioning model establishment.

In summary, using novel primary human culture models, how would you propose to investigate molecular mechanisms underlying myeloid/stromal interactions in solid tumors with the goal of identifying actionable translational biomarkers?

What potential solutions could be in scope?

1. Methods and conditions for primary human models (2 or 3D) that allow for *in vitro* /*ex vivo* modulation of the stromal/myeloid compartment and tumor that reflect biological processes *in vivo*

a. "*In vitro* models" refer to experiments using isolated cells or tissues outside of their natural environment (i.e., spheroids or organoids). Where isolated primary cells from human patients with/without cell lines combined in 2D or 3D culture to mimic the complexity and heterogeneity of the TME found in patients.
b. "*Ex vivo* models" refer to experiments using intact tissues (i.e. fragments or slices) that have been removed from the organism and maintained in a functional state for 2D or 3D culture experimentation.
c. We are also open to new and "cutting edge" culture methods that capture the human TME architecture and biology that do not neatly fit into these two definitions. For example, models reflecting interactions between the vasculature and the tumor (microenvironment) may also be of interest (like a tumor on a chip).

2. Monotherapy and/or combination therapy studies in these models are of interest for identification and monitoring of actionable translational biomarkers. Analytic methods of interest may include, but are not limited to, bulk and/or single cell-omics, cytokine analysis, immunohistochemistry (singleplex, multiplex, or spatial) and/or other cutting-edge methods with a clear path to clinical translation.

3. Models generated from primary, well annotated clinical samples are required. Post standard of care treatment models, such as checkpoint inhibitors (CPI), with demonstrated efficacy and/or resistant models, will be given priority.

What potential solutions would be out of scope?

- Approaches that do not reproduce biological processes taking place in human patients
- Approaches using models that do not include myeloid/stromal cells
- Models that are not solid-indications tumors
- Models that are colon cancer focused
- Classical proposals that are considered primarily fee-for-service or use existing fee-for-service proprietary platforms are out of scope, but we are open to co-development of novel tools
- Proposals without any preliminary/supporting data will not be as strongly considered

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 Oncology Translational Science (OTS) group within the Translational Medicine and Clinical Pharmacology (TMCP) Department. OTS is focused on the identification of translatable biomarkers to increase clinical success in patients with unmet medical needs. Through this collaboration, you would benefit from connecting with our experienced translational scientists guiding biomarker research spanning from late phase discovery to first-in-human trials.

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 initial funding request is structured in milestone and does not exceed 200,000 euros annually over a course of maximum two years per submitted project in total (including direct, indirect, overhead costs).

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 address our question. Proposals that flag existing data and results containing preliminary evidence and characterization of the viability and intactness of human TME and tumors in culture that reflects *in vivo* biological processes will be prioritized (please share only non-confidential information as part of your application). Additional success criteria are:

- Proven track record in the required field of expertise and translational science
- A well-structured proposal outlining a new and compelling scientific approach
- Outlining of the technical feasibility, and potentially existing data or previous publications that support feasibility / experience with outlined technology, based on existing techniques and established assays
- Your exact funding request should be outlined in your proposal based on a well-thought-through project. 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 200,000 euros annually for a maximum duration of two years per submitted project in total
- Ability to implement the outlined solution as part of a scientific collaboration project with Boehringer Ingelheim including access to relevant laboratory infrastructure that would allow the use of the proposed model as part of the collaboration to characterize actionable translational biomarkers
- The project should be able to provide tangible outcomes within a timeframe of two years, or less
- Proposals that are open to sharing the model methods with Boehringer are of interest

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 12, 2025, 11:59 pm PST** at the very latest.
Phase 2	Our review of all proposals will be completed by the end of August 2025 and scientists will be informed after that.
Phase 3	Start of discussions for the collaboration agreement in Q4/2025.

Submitting a collaboration proposal

a. Check the outline of the opn2EXPERTS "Discovery of human myeloid/stromal biomarkers" on opnMe.
b. Alternatively, you may click the "Get Submission Template" banner to access the material transfer template.
c. Follow the instructions to upload your submission document (requires login or registration).
d. The upload allows you to attach additional application files if desired.
e. You will be able to access your final submitted collaboration proposal in your personal dashboard and follow its review status.
f. Please also visit the FAQ section on opnMe.com to learn more about our opn2EXPERTS program.