opnMe by Boehringer Ingelheim

opn2EXPERTS – Fast onset drusen model for dry AMD

Using novel fast onset cellular models, how would you propose to recapitulate drusen formation in the early stages of dry age-related macular degeneration?

Answers to this question including a proposal for collaboration can only be considered if they arrive no later than April 25, 2022 11:59 pm PST.

Boehringer Ingelheim

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

The dry form of age-related macular degeneration (dry AMD) is the leading cause of blindness in older adults with more than 170 million individuals affected globally and a high unmet medical need. It is characterized by a slow deterioration of the cells of the macula that causes progressive vision loss eventually leading to blindness[1].

One prominent aspect of the early pathology is the accumulation of yellowish extracellular deposits, so-called drusen, beneath the retinal pigment epithelium (RPE) over time. Sub-RPE drusen are mainly composed of lipids, apolipoproteins and complement components[2] and their formation is a pathological manifestation shared by many other macular degenerative diseases beyond dry AMD. Drusen prevents the essential metabolic and oxygen exchange between the RPE and the blood stream, thus causing RPE and retinal atrophy. It is hypothesized that the clearance of drusen in dry AMD patients might improve the retinal condition and stop/slow-down disease progression[1].

One challenge in the development of new therapeutic concepts targeting this aspect of the disease is the lack of fast onset and robust *in vitro*/*ex vivo* models. The currently described cellular models that aim at reproducing drusen have a very slow onset (>3 months *in vitro*[3] and > 8 months *in vivo*[4]) or may lack quantitative and reproducible readouts[5]. Thus, such models have not proven feasible for routine testing of new therapeutic concepts in a preclinical (pharmaceutical) setting.

Therefore, new robust cellular *in vitro* or *ex vivo* models that recapitulate these early aspects of the disease in a foreseeable time frame may help us to develop new therapeutic options for dry AMD.

What potential solutions could be in scope?

1. Robust *in vitro*/*ex vivo* drusen model that is fast, reproducible, and quantitative
2. *In vitro* model established in human primary/iPSC based RPE validated across different donors
3. *Ex vivo* model based on animal derived tissues (e.g., mouse, rat, porcine, bovine, rabbit)

What potential solutions would be out of scope?

The following will be considered out of scope:

1. Pure *in vivo* based models
2. Slow onset drusen model (beyond one month-not including the RPE differentiation time)

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 Retinopathies Discovery 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 initial funding request is structured in milestone and does not exceed 200,000 euros per submitted project in total.

The opportunity for a funded stay at Boehringer Ingelheim for technology exchange / training is potentially available, as is the availability of custom biological tools and reagents.

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).

To maintain the highest degree possible in an open innovation environment, we plan to announce the winner(s) publicly and feature them on opnMe.com and our social media channels. We would guide you through this process and as part of it we would kindly ask for your upfront consent, in case our scientific jury has selected your answer.

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 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 per submitted project in total.
- 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 laboratory.

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 **April 25, 2022 11:59 pm PST at** the very latest
Phase 2	Our review of all proposals will be completed by end of June 2022 and scientists will be informed beginning of July 2022.
Phase 3	Potential collaboration starting date in Q3/2022

Submitting a collaboration proposal

- Check the outline of the opn2EXPERTS "Fast onset drusen model for dry AMD" on opnMe.
- Alternatively, you may click the "Get Submission Template" banner to access the material transfer 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 32TFAQ section32T on opnMe.com to learn more about our opn2EXPERTS program.

Reference

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3. Galloway C. A., Dalvi S., Hung S. S. C., MacDonald L. A., Latchney L. R., Wong R. C. B., Guymer R. H., Mackey D. A., Williams D. S., Chung M. M., Gamm D. M., Pébay A., Hewitt A. W., Singh R. Drusen in patient-derived hiPSC-RPE models of macular dystrophies *Proc National Acad Sci* **2017**, 114, E8214–E8223. DOI: 10.1073/pnas.1710430114, PubMed.
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