

# EXHIBIT 2



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**Fw: Initial Award Notification DMS-2527556**

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**From:** Feng, Zhilan J <zfeng@nsf.gov>  
**Sent:** Friday, August 15, 2025 10:10 AM  
**To:** Roper, Marcus <mroper@math.ucla.edu>; Dinh, Vu <vdinh@nsf.gov>  
**Cc:** Davis, Lisa G. <lgdavis@nsf.gov>; Feng, Zhilan J <zfeng@nsf.gov>  
**Subject:** RE: Initial Award Notification DMS-2527556

Dear Marcus,

Unfortunately, the latest instruction we received is no recommendations for new awards to UCLA. Sorry about that.

Best,  
Zhilan

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**From:** Roper, Marcus <mroper@math.ucla.edu>  
**Sent:** Friday, August 15, 2025 12:58 PM  
**To:** Feng, Zhilan J <zfeng@nsf.gov>; Dinh, Vu <vdinh@nsf.gov>  
**Cc:** Davis, Lisa G. <lgdavis@nsf.gov>  
**Subject:** [EXTERNAL] - Re: Initial Award Notification DMS-2527556

Dear Zhilan and Vu,

According to UCLA research admin, the recent court ruling means that UCLA faculty are once again eligible to receive NSF grants. I don't know whether that makes it possible for my proposal to be recommended. And there may be other considerations and deadlines, so I don't want this email to seem pressuring in anyway on you to recommend it. In any case, I am grateful to you and to Lisa for your continued advocacy for math biology during these challenging times.

With warm wishes,

Marcus.

Professor of Mathematics and Computational Medicine  
Vice Chair of Undergraduate Studies  
Dept. of Mathematics  
Math Sciences Building 7911  
UCLA, Box 951555  
Los Angeles, CA 90095-1555

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**From:** Roper, Marcus <[mroper@math.ucla.edu](mailto:mroper@math.ucla.edu)>  
**Sent:** Tuesday, August 5, 2025 8:56 AM  
**To:** Feng, Zhilan J <[zfeng@nsf.gov](mailto:zfeng@nsf.gov)>; Dinh, Vu <[vdinh@nsf.gov](mailto:vdinh@nsf.gov)>  
**Cc:** Davis, Lisa G. <[lgdavis@nsf.gov](mailto:lgdavis@nsf.gov)>  
**Subject:** Re: Initial Award Notification DMS-2527556

Dear Zhilan,

I appreciate your letting me know.

With best wishes,

Marcus.

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**From:** Feng, Zhilan J <[zfeng@nsf.gov](mailto:zfeng@nsf.gov)>  
**Sent:** Thursday, July 31, 2025 5:38 AM  
**To:** Roper, Marcus <[mroper@math.ucla.edu](mailto:mroper@math.ucla.edu)>; Dinh, Vu <[vdinh@nsf.gov](mailto:vdinh@nsf.gov)>  
**Cc:** Davis, Lisa G. <[lgdavis@nsf.gov](mailto:lgdavis@nsf.gov)>; Feng, Zhilan J <[zfeng@nsf.gov](mailto:zfeng@nsf.gov)>  
**Subject:** RE: Initial Award Notification DMS-2527556

Dear Marcus,

New development: We have been told that DGA is holding off issuing new awards to UCLA. So, I am not allowed to put forward this award recommendation until further notice. Sorry about that.

I will keep all documents and get the recommendation ready for submission when it is allowed.

Best,  
Zhilan

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Zhilan Julie Feng, Ph.D.  
Program Director, Mathematical Biology  
Division of Mathematical Sciences, National Science Foundation  
Email: [zfeng@nsf.gov](mailto:zfeng@nsf.gov)



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**From:** Feng, Zhilan J <[zfeng@nsf.gov](mailto:zfeng@nsf.gov)>  
**Sent:** Thursday, July 31, 2025 8:19 AM  
**To:** Roper, Marcus <[mroper@math.ucla.edu](mailto:mroper@math.ucla.edu)>; Dinh, Vu <[vdinh@nsf.gov](mailto:vdinh@nsf.gov)>  
**Cc:** Davis, Lisa G. <[lgdavis@nsf.gov](mailto:lgdavis@nsf.gov)>; Feng, Zhilan J <[zfeng@nsf.gov](mailto:zfeng@nsf.gov)>  
**Subject:** RE: Initial Award Notification DMS-2527556

Thanks, Marcus for the information.

Please make sure that the budget is submitted asap as it takes some time for the revised budget to show up in the system and we must get all documents ready and submit the recommendation today!

Please also make sure that the item 3 is taken care of: "Please confirm with your institution's Grants Office that the indirect cost rate used in the preparation of your budget and listed in your budget justification is up to date at the anticipated project start date."

Best,  
Zhilan

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**From:** Roper, Marcus <[mroper@math.ucla.edu](mailto:mroper@math.ucla.edu)>  
**Sent:** Thursday, July 31, 2025 12:55 AM  
**To:** Dinh, Vu <[vdinh@nsf.gov](mailto:vdinh@nsf.gov)>  
**Cc:** Feng, Zhilan J <[zfeng@nsf.gov](mailto:zfeng@nsf.gov)>; Davis, Lisa G. <[lgdavis@nsf.gov](mailto:lgdavis@nsf.gov)>  
**Subject:** [EXTERNAL] - Re: Initial Award Notification DMS-2527556

This email originated from outside of the National Science Foundation. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Dr. Dinh and Dr. Feng,

I'm including, below, a draft of the public abstract. I sought to follow the outline that you provided — please feel free to ask for any revisions needed. The C&P has now been submitted so we will finish the budget tomorrow. For IRB approval, due to the reduced scope of experiments, Dr. Zhang believes that the experiments will be covered by one of his existing IRBs, which is attached to this email.

With thanks,

Marcus Roper.

The foremost cause of blindness among working age adults is proliferative diabetic retinopathy. In diabetic retinopathy, diabetes-related damage in the microscopic vessels in the eye affects the oxygen and energy supplied to the light receptive cells in the back of the eye. Vision loss occurs when the disease progresses to proliferative form, when newly sprouted vessels start to block light from reaching the back of the eye. Patients with diabetes are routinely screened for diabetic retinopathy using ophthalmoscopes to take photos of the back of the eye. However, although these microscopes can visualize the largest blood vessels, they provide limited data about the narrow vessels that supply oxygen and energy, and they cannot visualize the blood flow carried by the vessels. Here, a collaborative team made up of a mathematician and a bioengineer will link new mathematical models to observations using adaptive optics tools that view the blood vessel network with unprecedented resolution and speed. The goal of the project is to develop mathematical models that can fill in the missing information from conventional ophthalmoscopes, approaching the endgame of being able to predict a patient's risk of vision loss. In addition to targeting a common and life-limiting condition, the project includes broader impacts activities that include research contributions by undergraduates, and the creation and workshopping of K-12 lessons, linking eye health and mathematical modeling in collaboration with a high school math specialist.

The central hypothesis of the project is that insufficient or patchy supply oxygen supply triggers the onset of vision harming proliferative retinopathy, and that oxygen insufficiency can be detected or even predicted using existing methods of viewing the retina. To test this hypothesis, the team will connect imaging data with new mathematical models and data completion tools. The specific emphases are on creating experimentally validated mathematical models to predict blood flow from widest to narrowest vessels first from high resolution vessel geometry measurements, and then from the relatively lower resolution data provided by conventional ophthalmoscopes, using new data completion tools to fill in the data that is missing from the low resolution imaging, and coarse-graining to connect blood flow to oxygen distribution within the retina. For the broader impact activities the PIs will work with staff of the Curtis Center for K-12 math education to create standards-aligned lesson plans on the organization of vascular networks, and connections between mathematics and health, and to disseminate these lesson plans through a quarterly professional development event for California math teachers.

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**From:** Dinh, Vu <[vdinh@nsf.gov](mailto:vdinh@nsf.gov)>  
**Sent:** Wednesday, July 23, 2025 7:00 AM  
**To:** Roper, Marcus <[Mrper@math.ucla.edu](mailto:Mrper@math.ucla.edu)>

**Cc:** Feng, Zhilan J <[zfeng@nsf.gov](mailto:zfeng@nsf.gov)>; Davis, Lisa G. <[lgdavis@nsf.gov](mailto:lgdavis@nsf.gov)>

**Subject:** Initial Award Notification DMS-2527556

Dear Dr. Roper,

I am pleased to inform you that I intend to recommend an award for your NSF proposal DMS-2527556 titled "eMB: Dissecting the biophysics of diabetic retinopathy". While I cannot recommend an award at the originally requested level, I am prepared to recommend a three-year award at the level of **\$300,000** with a start date of **9/1/2025**.

Please note that Program Directors only make recommendations; all recommendations made by program directors must be approved at the divisional level and that only NSF's Division of Grants and Agreements (DGA) is authorized to make awards. Thus, you will not receive an official notification of the award until the DGA has approved it. This note/email should be considered as one of the first stages in the recommendation process.

Please be reminded that the actual award size may vary, depending on what other support and commitments of time you have, particularly other projects whose work overlaps this one.

Please confirm the receipt of this email as some systems filter out NSF emails, and I want to be assured that you received this communication. Before I can recommend the awards, I would like to remind you to please submit any overdue NSF project report as soon as possible, and I will need the following items from you:

1. **Updated Current Support:** Please provide updated information on current NSF supports for all PIs/Co-PIs and senior personnel. Please indicate whether there is overlap with any of the current NSF supports. If there is overlap, please provide the specific aims of the project with overlap, precisely indicating the scientific areas/research where the overlap occurs. Again, please make sure that the total salary support from all NSF projects (including this one) for each project team member will not exceed 2 months per year. You will receive a separate email with the instruction for submitting the Current & Pending documents.
2. **Revised Budget** - Please submit through [Research.gov](https://www.research.gov) your REVISED Budget so that the total three-year budget does not exceed **the recommended amount**. We prefer that the yearly budgets be approximately equal. Again, please note that a PI may not receive more than two months of salary per year from all NSF resources combined. In addition, if the original budget included support for students, we encourage you still to include some support for students in the revised budget. You may choose to move funds from one category to another according to the above guidelines.

A scope statement is needed because the award size is reduced from the original request. I must ask you to provide a statement as to how the scope of the proposed project will be affected. For the statement, you might consider these questions regarding the scope of the work:

- (a) Will fewer results be obtained during the duration of the grant as a result of the budget reduction?
- (b) Will the work proceed more slowly?
- (c) Will the development of software be delayed?
- (d) Will parts of the project have to be eliminated/postponed?

If you do not expect any change, you may say so. Please be reminded that this statement must be endorsed by your institutional representative, usually an individual connected

with your university's office of sponsored research. Both the revised budget and scope statement can be submitted through [Research.gov](https://www.research.gov)

Please submit the updated Current & Pending documents before attempting to submit the revised budget as the system might not allow you to begin the budget revision process until these documents have been submitted.

3. **Indirect Cost Rate** - Please confirm with your institution's Grants Office that the indirect cost rate used in the preparation of your budget and listed in your budget justification is up to date at the anticipated project start date. If the indirect cost rate has changed or is expected to change before or on the anticipated project start date, please reply to this message, and inform me of the need to submit a revised budget, then please submit through [Research.gov](https://www.research.gov) a REVISED budget and budget justification using the indirect cost rate in effect at the time of the anticipated project start date. Note that use of an incorrect indirect cost rate can lead to a delay in award processing.
4. **IACUC - For projects involving vertebrate animals only**, you must indicate that you have a current approved protocol in one of two ways: (1) by indicating the approval date and PHS Assurance Number on the cover page OR (2) if you did not indicate on your cover page that you have an approved IACUC protocol for the project described in the proposal (i.e., you indicated "Planned" or did not check the "Vertebrate Animals" box), then please provide via email a PDF of the formal IACUC Approval document indicating that this project has an approved animal use protocol. It should be signed by the Chair of your IACUC Committee, or equivalent, and show the EXACT title of this project and the approval dates (including the expiration date). For more information, please refer to the PAPPG (NSF 24-1 pages II-37 to II-38).
5. **IRB – For projects involving human subjects only**. All projects involving human subjects must either (1) have approval from an Institutional Review Board (IRB) before issuance of an NSF award, or (2) must affirm that the IRB has declared the research exempt from IRB review, in accordance with the applicable subsections, as established in 45 CFR § 690.104(d) of the Common Rule. For more information, please refer to the PAPPG (NSF 24-1 pages II-38 to II-40).
6. **Award Abstract** (300 - 500 words total – think BREVITY) - As part of the NSF commitment to accountability in government, the public award abstract provides a clear and concise explanation of the value of the funded research, including its broader impacts, to all stakeholders (e.g. taxpayers, Congress, and scientists). The Award Abstract contains only two-paragraphs and is written in the third person, as follows:

Non-Technical Paragraph (<250 words): Provide a concise, big picture overview of the project that will serve as justification to the general public for federal funding. This should include descriptions of the broader scientific importance of the project, the connection between the funded science and society (broader impacts), and any novelty of approach or tools. This paragraph must be written for an educated reader who is **not** a scientist or engineer, and thus scientific/technical jargon and acronyms must not be used.

Technical Paragraph (<250 words): This paragraph is targeted to the scientific peer group; state the specific problem to be studied, the goals and scope of the research, and the methods and approaches to be used. It may be suitable to modify the original Project Summary for this paragraph; however, this document must reflect any scope changes resulting from the review process. This paragraph should not repeat information provided in the first (non-technical) paragraph.

Please send me the abstract as plain text (as opposed to other word-processing formats) via email. I expect to receive the abstract, together with responses to any other items that apply within five business days, to facilitate a timely processing of the award. Items 1 and 2 must be submitted via your Sponsored Research Office through [Research.gov](https://www.research.gov). For technical questions about [Research.gov](https://www.research.gov), if necessary, please contact Help Desk via e-mail at [rgov@nsf.gov](mailto:rgov@nsf.gov) or call **1-800-381-1532**.

Once again, congratulations as I am sure you know, competition for funds at NSF is extremely keen, and the success of your proposal reflects the high regard your peers have for your work. Please let me know if you have any questions.

Thank you and best wishes,

Vu Dinh

Program Director

On behalf of the Math Bio Team (Lisa Davis, Vu Dinh, Zhilan Feng)

Division of Mathematical Sciences

National Science Foundation