

# Peer-Review: Why, How-To, and What Not To Do

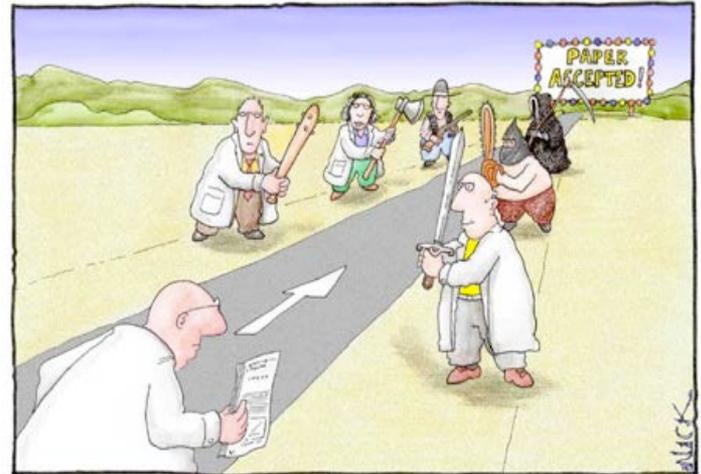
Prof. Luis Liz-Marzán  
Editor, *ACS Omega*



# What is Peer-Review?

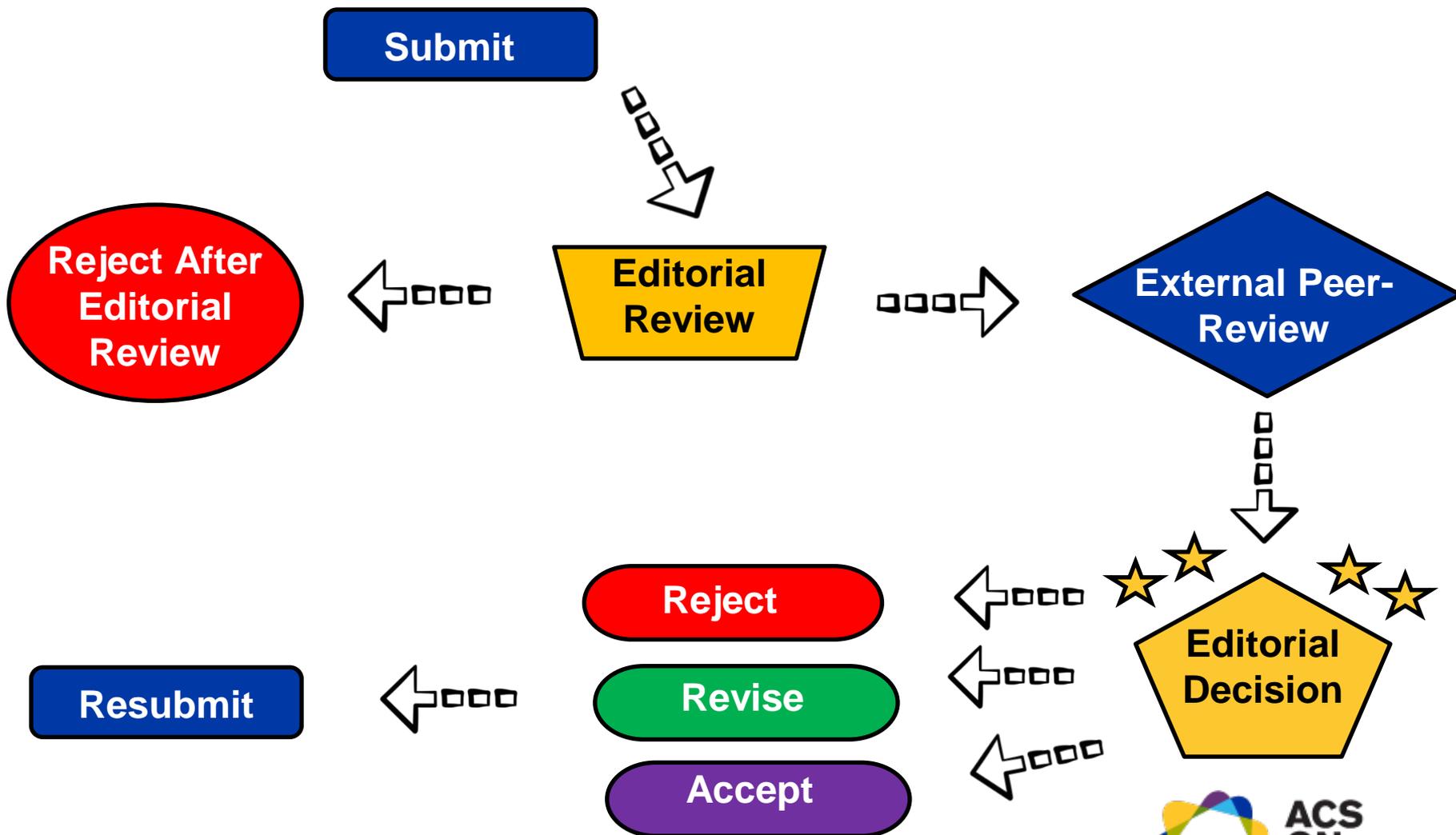
## Why is Peer-Review Necessary?

- Peer-review is the evaluation of work by people with relevant expertise and interests and is intended to determine a manuscript's relevance and suitability for publication while upholding scientific integrity.
- Scrutiny by scientific peers is an invaluable step in the publication process and helps maintain a high standard for published research.
- **Pay it forward:** As a research active member of the scientific community, participating in peer-review is an important way to engage with others in your area of expertise.



Most scientists regarded the new streamlined peer-review process as 'quite an improvement.'

# The Major Steps in Peer-Review



# Editorial Review (aka Pre-Screening)

Not all manuscripts are reviewed externally.

To ensure consistency, maintain standards and improve efficiency, upon submission a manuscript is subjected to editorial review. The editors pre-screen for:

- Scope
- Scientific merit
- Significance

On the basis of this initial review, a decision is made about whether the manuscript warrants external peer-review or will be declined after editorial review.



Cartoon by Jorge Cham, phdcomics.com



# What Are the Editors Looking For?

To warrant external review, a manuscript should have:



- **Appropriate Scope**
  - The work should resonate with the journal's target audience, which improves its chances for reaching its intended readers.
  
- **Novelty/Urgency**
  - The manuscript should be original and provide insight into a challenging problem or fundamental issue, advancing the discipline in a timely way. Avoid reporting just an incremental improvement with a slightly different set of conditions.



# What Are the Editors Looking For?

- Technical Validity
  - The research should be well designed, and the experiments, data collection and interpretation should be completed at a high level.
- High Quality
  - The manuscript should be clear, concise, and formatted correctly. If the writing is confusing and contains grammatical errors, reviewers may be unable to judge the scientific quality.

# Why Do Journals Pre-screen?

Reject after editorial review decisions may not feel good to authors, but they:

- Avoid over-burdening reviewers who can then spend more time carefully analyzing the manuscripts appropriate for review.
- Shorten decision times so manuscripts arrive at the appropriate journal more quickly.

**Appealing:** Although the editors strive to ensure consistency, fairness and transparency in the review process, occasionally an interesting and important finding is misunderstood. If your manuscript is declined and you believe the editors or reviewers overlooked critical details in your work:

- Contact the editorial office and ask for an explanation – if you are appealing a decision, make sure to provide concrete reasons for requesting reconsideration.
- Appealing a decision is uncommon, so be judicious!



# How Are Peer-Reviewers Selected?

Reviewers are selected from a pool of experts to independently assess the work. Good reviewers should have:

- Broad knowledge and understanding of the field
- Technical expertise to evaluate experiments, data and interpretation
- Ability to offer constructive, fair and unbiased opinions

Many journals request suggested reviewers from the author. Authors should avoid suggesting:

- Friends
- Collaborators
- Anyone with a conflict of interest

Editors often invite both suggested reviewers and reviewers from an independent pool in order to ensure a fair review process.



# How Does the Editor Make a Decision?

The ultimate decision on a paper comes from the handling editor, but the editor relies on peer-reviewers to inform the decision.

When a sufficient number of reviews have been returned, the editor:

- Carefully reads and examines the manuscript to understand key points
- Analyzes each reviewer report
- Determines if additional information/experiments are required
- Provides a decision to the author

Possible decisions include:

- **Accept:** manuscript is accepted as is
- **Revise:** manuscript requires additional revisions or experiments
- **Reject:** points raised by reviewers are significant; revisions are unlikely to improve the manuscript to meet the journal's standards



# How Should I Use the Reviewer Comments?

- Carefully read the decision letter and reviewer comments.
- Try to understand the comments and evaluate their relative importance.
- Perform any necessary experiments and include the results in the paper.
- Be timely! If you cannot complete a revision by the deadline, contact the editorial office to request an extension.



“Poor soul. Beaten down by peer reviews.”



# Responding to Reviewer Comments

- Prepare your response in a professional way – remember the reviewers are trying to improve the quality of your manuscript!
- Respond to **each comment**, noting what changes (if any) were made.
- If you disagree with a comment, that is okay – but make sure the editor understands why you disagree. Use science to back up your argument.
- Remember that your response to the reviewer comments may be shared with reviewers along with the revised manuscript, so respectful comments go a long way.
- Lastly, do not spend time trying to guess the identity of the reviewers! Spend the time making your manuscript better, which is what the reviewers and editors are trying to do.

# Common Mistakes to Avoid When Responding to Reviewer Comments

## You Might Say:

The reviewer is not an expert in my field.

## The Editor's Response:

The reviewer is likely someone you suggested.



[offcenterdesigns.net](http://offcenterdesigns.net)

## You Might Say:

The reviewer misunderstood the point of the manuscript (or a specific result).

## The Editor's Response:

If the reviewer did not understand the results or significance, you need to clarify the text or figures to present the work more clearly.

# Common Mistakes to Avoid When Responding to Reviewer Comments

## You Might Say:

The reviewer is wrong and does not deserve a response.

## The Editor's Response:

This response does not explain how or why the reviewer is wrong. Even a comment with which you do not agree needs to be backed up by science.

## You Might Say:

Similar papers have been published in this journal recently – why is my manuscript being picked apart?

## The Editor's Response:

If your manuscript is similar to other recent work, it likely lacks novelty and may not meet the journal's standards.



# What Should I Do if My Manuscript is Declined?

- Having a manuscript declined after external review can be disappointing, but remember, even editors have manuscripts declined.
- Step back from the manuscript for a few days to gain a fresh perspective.
- Refocus on the science and examine the reviewers' comments.
- Use the comments constructively to improve the manuscript.
- Submit to a new journal with the appropriate scope that reaches your target audience.

# How Do I Become a Reviewer?

Reviewers typically hold independent research positions, as it takes time to establish a reputation as an expert. To be seen as an expert:

- Publish high quality work in reputable journals.
- Attend conferences and network to enhance your standing within the scientific community.
- Let your interest be known to colleagues and advisors, who may suggest you as a reviewer.
- Let your interest be known to the journal – provide your CV and publication record to the editorial office.
- When you are invited to review, provide timely, thoughtful and thorough responses.



# Anatomy of a Good Review

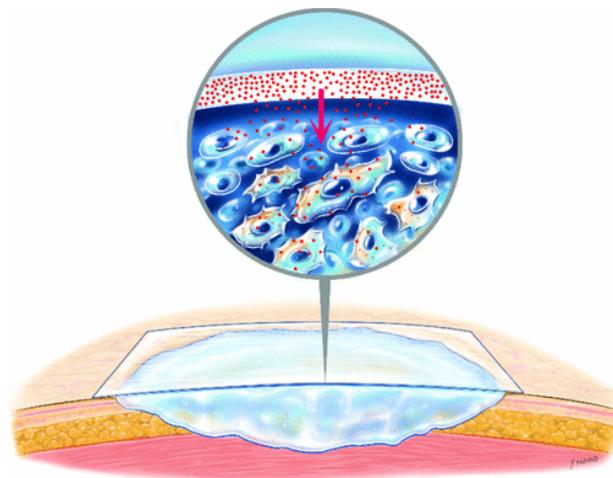
<b>Manuscript Summary</b>	Show you understand the work by providing a short summary.
<b>Contextualize</b>	Put the work in context relative to other research – compare and cite literature.
<b>Impact/Broad Appeal</b>	Discuss the possible impact of the work and its interest to a broad readership.
<b>Scientific Merit</b>	Is the research well thought-out and completed at a high level?
<b>Data Quality</b>	Were the data obtained correctly? Are any (control) experiments missing?
<b>Presentation/ Grammar</b>	Are there problems with the grammar or the quality of the writing? Are necessary references included?
<b>Recommendation</b>	Give your overall recommendation. If you have major concerns, let the editor know!

# Peer-Review Practice Exercise

1. Over the next 15 minutes, read and review the *ACS Omega* paper

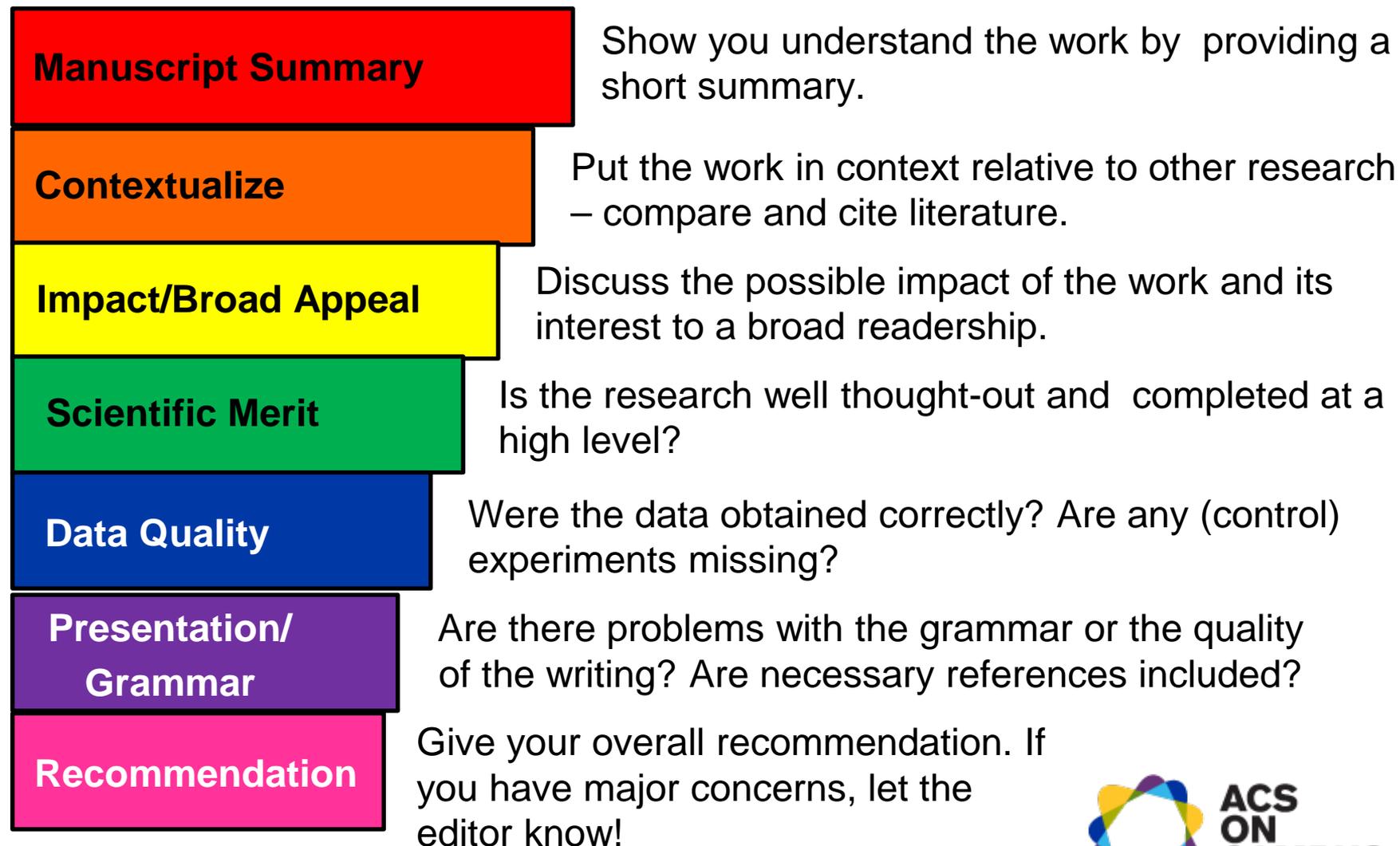
“Auxiliary Biomembranes as a Directional Delivery System To Control Biological Events in Cell-Laden Tissue-Engineering Scaffolds”

[10.1021/acsomega.6b00502](https://doi.org/10.1021/acsomega.6b00502)



2. Focus on providing a thorough and thoughtful analysis of the paper. Use the tips we have just discussed for assistance.

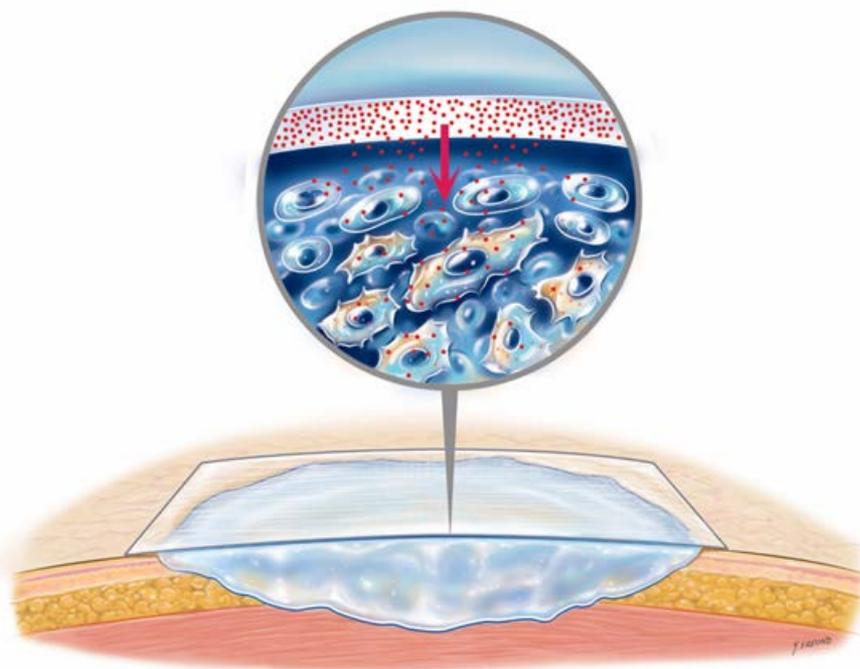
# Anatomy of a Good Review



# Step 1: Manuscript Summary

## Manuscript Summary:

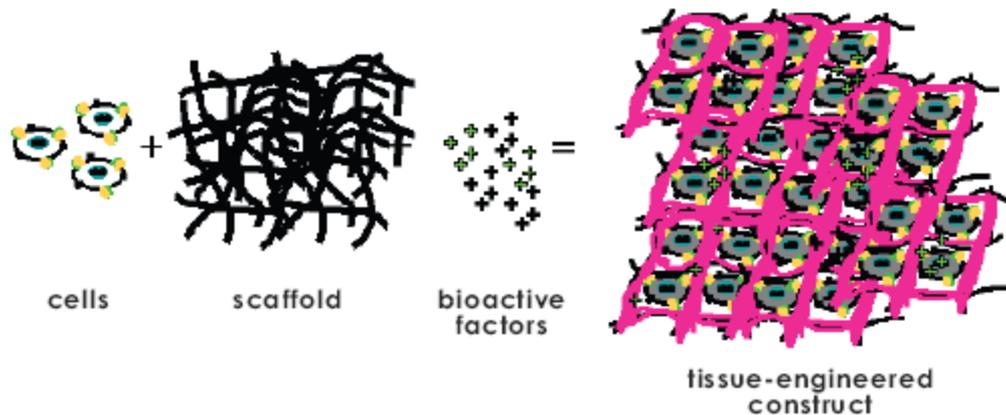
This manuscript describes a way to decouple cell entrapment and release of a cell-stimulating agent (growth factor in this case) in tissue engineering.



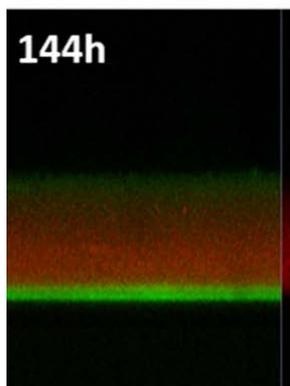
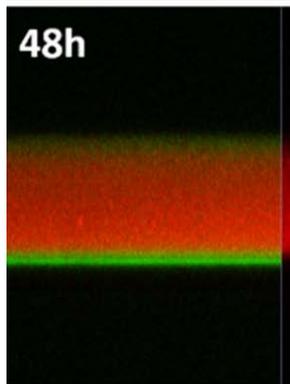
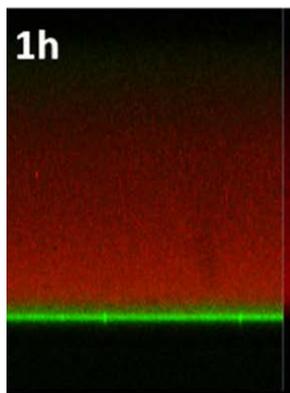
# Step 2: Contextualize

## Contextualize:

Directing the activity of cells in engineered tissue through incorporation of growth factors is made difficult by quick leakage of the substances or, if covalent immobilization of the growth factors is used, by lack of interaction of the growth factors with the host tissue.



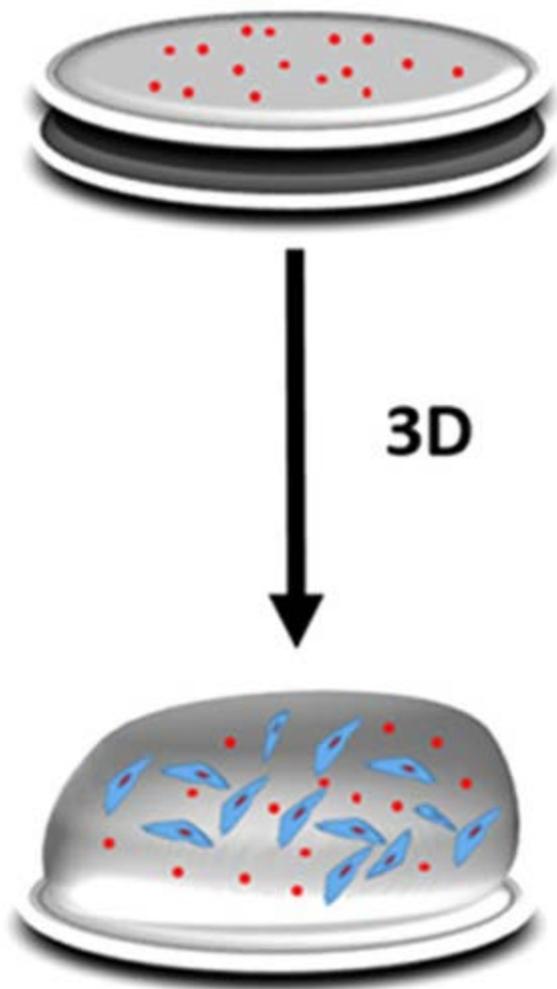
# Step 3: Impact and Broad Appeal



## Impact and Broad Appeal:

Microenvironment control in tissue engineering is crucial to appropriately direct development of the tissue for the desired purposes. In addition, quick release of substances such as growth factors can be toxic to the tissue itself.

## Step 4: Scientific Merit



### **Scientific Merit:**

The authors develop an alternative (and inexpensive) platform for tissue engineering. In addition, they overcome two problems by elegantly decoupling the cell trapping and delivery functions, thus offering more control.

# Step 5: Data Quality

## Data Quality:

The authors used SEM and Confocal Laser Scanning Microscopy to monitor diffusion of growth factor from the film into the hydrogel. The elastic modulus of the hydrogel was measured by AFM nanoindentation; controlled release of growth factors was measured by ELISA; a series of biological tests were performed on the cultured cells. The sheer amount of work the authors did to tell a complete story (crosslinking of the hydrogel to in vitro tests) makes the paper stand out.



# Step 6: Presentation and Grammar

## **Presentation and Grammar:**

The manuscript is well-written and easy to understand. The references appear to be complete. The problem the authors are trying to address is complex. The various materials and techniques they use are not novel in and of themselves, but the modular architecture is: it takes some careful reading to fully appreciate this. The authors should stress more clearly (and earlier in the paper) what are the unique features of their work.

# Step 7: Recommendation

## Recommendation:

I believe this manuscript will be appreciated by the ACS Omega readership and is very interesting for the biomaterials/tissue engineering community. After a minor revision, the manuscript should be accepted.

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Article



<http://pubs.acs.org/journal/acsofd>

## Auxiliary Biomembranes as a Directional Delivery System To Control Biological Events in Cell-Laden Tissue-Engineering Scaffolds

Helena Knopf-Marques,<sup>†,‡,∇</sup> Julien Barthes,<sup>†,§,∇</sup> Lucie Wolfova,<sup>||</sup> Bérangère Vidal,<sup>§</sup> Geraldine Koenig,<sup>†</sup> Jalal Bacharouche,<sup>⊥</sup> Grégory Francius,<sup>⊥</sup> Helle Sadam,<sup>#</sup> Urmas Liivas,<sup>#</sup> Philippe Lavalley,<sup>\*,†,‡</sup> and Nihal Engin Vrana<sup>\*,†,§</sup>



# What Reviewer Comments Should Be Shared Only with the Editor?

Comments to the authors are required, but comments to the editorial office are optional. You should provide comments to the editor if:

- You are concerned a conflict of interest exists.
- You have reviewed the manuscript previously for another journal.
- Other papers in the field should be included in the references but you want to avoid adding them to the review directly to protect your anonymity.
- You believe scientific misconduct has occurred.

**Do NOT tell the editor the manuscript is unacceptable and then provide positive reviews to the authors!**

Comments
Comments to the Editorial Office (optional)
<b>req</b> Comments to the Author
Type your review directly into the text box or type "Review attached" (and attach file below), as appropriate.



# Avoid conflicting recommendations:

**Articles submitted to ACS Omega should be reviewed on the basis of scientific validity, and not on a subjective assessment of importance.**

**Please respond to the following:**

**req** Is the technical quality of the research reported within valid and appropriate?

Yes

**req** Please evaluate the degree of novelty and originality of the research reported

Good

**req** Are the conclusions adequately supported by the data presented?

Yes

**req** Are the literature references appropriate and up to date?

Yes

**req Recommendation**

Publish as is; no revisions needed.

Publish after minor revisions.

Publish after major revisions.

Do not publish.



# Take Home Messages

## As an Author:

- Reviews are not meant to be personal.
- Everyone gets a manuscript declined, even the editors!
- If you become angry after reading a review, cool off before responding.
- Your response should be professional and scientifically-based.

# Take Home Messages

## As a Reviewer:

- Respond quickly.
- If you are unable to review, suggest alternate reviewers.
- Substantiate your review with science, do not just provide an opinion.
- You are not expected to review work that is poorly written or incomprehensible. Include these remarks in your review as needed.
- Provide citation information when relevant to the review.

# Learn About Peer-Review First Hand From the Editors!

View the Publishing Your Research 101 Video Series  
Episode 6: The Review Process



Review the Virtual Issue on Mastering the Art of Scientific Publication  
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# Questions?

Prof. Luis Liz-Marzán  
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