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**Submission Confirmation for An accelerated wound healing surgical suture engineered with an extracellular matrix (adhm.202001686)**

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**Advanced Healthcare Materials** <em@editorialmanager.com>

Tue, Sep 22, 2020 at 7:45 PM

Reply-To: Advanced Healthcare Materials &lt;advhealthmat@wiley-vch.de&gt;

To: Agustina Setiawati &lt;nina.lifesci@gmail.com&gt;

You are being blind carbon copied ("bcc:'d") on an e-mail "To" "Kwanwoo Shin" [kwshin@sogang.ac.kr](mailto:kwshin@sogang.ac.kr)

Dear Prof. Shin,

Your submission entitled "An accelerated wound healing surgical suture engineered with an extracellular matrix" has been received by journal Advanced Healthcare Materials. The manuscript number for your submission is adhm.202001686.

To view your submission, please login to <https://www.editorialmanager.com/advhealthmat/> by entering your username (\*\*\*\*\*) and password and selecting the "Author Login" option. Please note that the current status of your submission will remain "Under consideration" until an editorial decision is made, at which time you will be notified by e-mail.

If the manuscript is accepted for publication, this author's affiliation will be used to determine eligibility for some open access funding (click [here](#) for details).

This message has been sent to all named co-authors listed in the submission process to serve as notification of submission.

Thank you for submitting your work to the journal.

Kind regards,

Editorial Office

Advanced Healthcare Materials  
E-mail: [advhealthmat@wiley-vch.de](mailto:advhealthmat@wiley-vch.de)  
Tel: +49(0)6201-606-235

<http://www.advhealthmat.de>

Impact Factor (2020 Journal Citation Reports): 7.367

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Please find a copy of the submission questions, which you answered during the submission, for your records:

**Additional Information**

13. Kwanwoo Shin, Ph.D.

Question	Response
Please submit a plain text version of your cover letter here.	September 4, 2020  Dr. Jos Lenders, Editor-in-Chief Advanced Materials,  Dear Dr. Lenders, We wish to submit a new manuscript entitled "An accelerated wound healing surgical suture engineered with an extracellular matrix" for consideration for publication in Advanced Materials. This manuscript described a novel approach to transform any degradable sutures (for stitching), not only to highly biocompatible but also to wound healing scaffolds via providing a biomimetic analogue to negatively charged proteoglycans on sutures, followed by self-binding and unfolding of fibronectin. Without any modification to physical or mechanical properties of the suture, we found in vivo and in vitro that the presence of unfolded fibronectin molecules on the sutures could improve cell

growth, and migration of cells significantly, which are essential requirements for rapid wound healing. We encourage you to evaluate Movie S5, and 6 first to intuitively appreciate the cell attachment and growths on the unfolded and stretched FN-sutures, in comparison to those on the adsorbed FN-sutures. Furthermore, the friction between the suture and the tissue, which often trigger serious secondary trauma to soft tissue, was reduced significantly. We further demonstrated that the anti-bacterial activities, suggesting that the stretched FN on sutures can be stored for longer period, and minimize any unwanted surgical site infection. Finally we applied our engineered suture to in vivo mice model, and found that our FN adsorbed suture clearly improved skin tissue regeneration, leading to accelerated wound healing.

We envision that this approach could be used to produce highly effective surgical devices that enhance wound healing, can be applied to almost any polymeric materials, including scaffolds, implants, as well as sutures. Furthermore, combining with the phenomenon of molecularly releasing FN to wounded tissues, a smart medical device may pave the way to achieving the greater goal of developing a drug-delivery platform.

We believe that the subject matter and caliber of this work ideally suit it for publication in Advanced Materials, and that, given the interdisciplinary nature of the project, the paper will be of interest to a broad audience. We thank you in advance for your time and consideration on our behalf.

Sincerely,

Kwanwoo Shin, Professor and Director,  
Dept. of Chemistry & Institute of Biological Interfaces, Sogang University, 35 Baekbeom-ro, Mapo-gu, Seoul 121-742, KOREA  
Email: [kwshin@sogang.ac.kr](mailto:kwshin@sogang.ac.kr), Tel: +82-2-705-8441

Please confirm that the research and manuscript meet the ethical guidelines outlined in this journal's [Author Guidelines](#), including adherence to the legal requirements of the study country.

Yes, I confirm

Does the research described in this manuscript include animal experiments?

Yes

Please confirm that ethical approval from the national or local authorities was obtained prior to the research, and that this is included in the Experimental section of your manuscript.

as follow-up to "Does the research described in this manuscript include animal experiments?"

Yes, I confirm

Please provide the name of the national or local authority giving the approval in the textbox below, as well as in the Experimental section of your manuscript.

as follow-up to "Please confirm that ethical approval from the national or local authorities was obtained prior to the research, and that this is included in the Experimental section of your manuscript."

institutional animal care and use committee of Sogang University

If available, please provide the assigned approval/accreditation number of the laboratory/investigator in the textbox below, as well as in the Experimental section of your manuscript.

as follow-up to "Please confirm that ethical approval from the national or local authorities was obtained prior to the research, and that this is included in the Experimental section of your manuscript."

IACUC protocol (No. IACUC2020\_02)

Does the research described in this manuscript include human research participants (including for experiments with sensors or wearable technologies) or tissue samples from human subjects (including blood or sweat)?

No

Do you or any of your co-authors have a conflict of interest to declare?

No. The authors declare no conflict of interest.

Please give details of any related submission that has previously been considered by this journal.

Please give details of any related work that is currently being considered, or will be considered in the near future, by this

editorial office or any other publisher.

Please indicate if your work has been funded by any of the following funding bodies:

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**FW: Revision request for your submission to Advanced Healthcare Materials (adhm.202001686)**

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신관우 &lt;kwshin@sogang.ac.kr&gt;

Tue, Nov 3, 2020 at 10:42 PM

Reply-To: 신관우 &lt;kwshin@sogang.ac.kr&gt;

To: nina.lifesci@gmail.com

--- Original Message ---

**From** : "Advanced Healthcare Materials" <em@editorialmanager.com>**To** : "Kwanwoo Shin" <kwshin@sogang.ac.kr>**Date** : 2020/11/03 화요일 오후 9:13:19**Subject** : Revision request for your submission to Advanced Healthcare Materials (adhm.202001686)

Dear Prof. Shin,

Thank you for submitting your manuscript entitled "An accelerated wound healing surgical suture engineered with an extracellular matrix" (Communication, No. adhm.202001686) to Advanced Healthcare Materials. The reviewer report and comments are included at the end of this e-mail.

On the basis of these reviewer comments, we are not able at this stage to accept your manuscript for publication. I invite you to address the reviewer comments and make the necessary changes and improvements in a major revision of your manuscript.

To submit your revision, go to <https://www.editorialmanager.com/advhealthmat/> and log in as an Author using your username (kwshin) and password. Your submission can be found under the menu item "Submissions Needing Revision". The changes to your manuscript should be highlighted in a different color in the primary "Revised Manuscript" file.

Please provide a point-by-point response letter addressed to the reviewers, including a list of changes made and a rebuttal to any comments with which you disagree. You may copy the letter into the "Respond to Reviewers" box (if it is plain text only) or upload it as a "Response Letter to Reviewers" item (if it contains figures, tables, or special formatting such as formulas or equations). If necessary, you may also upload a separate revision cover letter addressed to the editor with any other information not intended for reviewers as a "Cover Letter to Editor" item. You will also be asked to upload a .zip archive containing the production data that will be used if your manuscript is accepted. See below for more details.

We should receive your revised manuscript by 01 Dec 2020. When we receive your revised manuscript, its suitability for publication in Advanced Healthcare Materials will be reassessed.

We recognize that authors are doing their best to revise manuscripts under challenging circumstances due to the COVID-19 pandemic. Should you need extra time, do not hesitate to contact the editorial office.

Yours sincerely,

Irem Bayindir-Buchhalter

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EDITORIAL COMMENTS:  
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Your manuscript also requires revision with respect to the language used. We therefore suggest that you ask a native English speaker or equivalent to assist you with correcting the spelling, grammar, word use, and punctuation throughout your manuscript. To help with this process you may wish to contact a professional language editing service, such as Wiley Editing Services (<http://wileyeditingservices.com/en/english-language-editing/>). Please note that without significant language improvement your manuscript unfortunately will not be acceptable for publication.

Statistics: For original research, please check that your manuscript includes a sub-section entitled "Statistical Analysis" at the end of the Experimental Section that fully describes the following information: 1. Pre-processing of data (e.g., transformation, normalization, evaluation of outliers), 2. Data presentation (e.g., mean  $\pm$  SD), 3. Sample size (n) for each statistical analysis, 4. Statistical methods used to assess significant differences with sufficient details (e.g., name of the statistical test including one- or two-sided testing, testing level (i.e., alpha value, P value), if applicable post-hoc test or any alpha adjustment, validity of any assumptions made for the chosen test), 5. Software used for statistical analysis.

Figure legends: Please make sure that all relevant figure legends contain the information on sample size (n), probability (P) value, the specific statistical test for each experiment, data presentation and the meaning of the significance symbol.

A more detailed checklist can be found here: <https://www.advancedsciencenews.com/road-better-data-presentation-dos-donts/>  
Please use appropriate tests, not t-test, to assess statistically significant differences between multiple groups.

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REVIEWER REPORT:  
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Please note that reviewers may not be numbered consecutively. Where reviewers have provided additional files, these are available here:

EVALUATION:

Reviewer's Responses to Questions

Please rate the importance of this submission.

Reviewer #1: Should be published in this journal

Reviewer #2: Could be considered for a sister journal

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Please rate the originality of this submission.

Reviewer #1: Acceptable level of new results

Reviewer #2: Insufficient level of new results

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Please rate the scientific and technical content of this submission.

Reviewer #1: Minor inconsistencies or inaccuracies

Reviewer #2: Minor inconsistencies or inaccuracies

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Please rate the length of this submission.

Reviewer #1: Concise and correct length

Reviewer #2: Concise and correct length

COMMENTS TO AUTHOR:

Reviewer #1: This article by Setiawati et al describes a novel fibronectin coating for surgical sutures, and a processing technique that causes the fibronectin to be fibrillar/stretch out. The technique is demonstrated for multiple sutures and in vitro assays demonstrate its advantages for: cell migration, adhesion, reduction in bacterial growth. In vivo assays showed favourable characteristics vs non-coated controls (increased epithelialization, collagen density, reduced friction). Given the ubiquitous use of sutures, I think this work is of high interest. I would recommend this article for publication, assuming the following points are adequately addressed.

1. Figure 1E, the differences between the various groups and what this is trying to show is not clear. Additionally, the equivalent samples in 4D look less different to me.
2. I can't figure out what is going on in 1F. Why are there dark regions? Are these stitched images? I would expect to see a single line of suture like for the PDO.
3. PDO is the best performing group in terms of bacteria. However, what happens when this is put in serum/implanted. Does it coat similar to PDO-FN? Is there data or studies to support that? This data brings into question the claim that the coating 'prevents the binding of infectious bacteria'. The e-coli data is better for the coated groups.
4. I can't fully follow the ELISA assay. How is the fibronectin captured on the plate? Why does it say 'for the blocking process, ....' and describe sample addition.
5. Pg 8. Express the released amounts of fibronectin as a percentage either in graph or in the text as it will facilitate cross-comparisons (the loading of fibronectin was inconsistent)
6. Is the data in Figure 3b and description true for all samples in the groups? I ask this as later in the text it states "...even though mice in all groups showed no differences macroscopically and suffered from inflammation in the area of the wound"
7. Pg 10. Can the authors comment on whether a thicker epidermis is necessarily a good sign? Shouldn't it be compared with the surrounding epidermis?
8. Pg 10: random collagen arrangement is described as being indicative of scar formation; to my knowledge scar has aligned collagen bundles and healthy skin has random arrangement? Additionally the scar borders in fig S8 are not convincing to me. How were these identified?
9. For the suture studies, can the authors justify the parameters chosen
10. Is there any significance in the data in 4C?
11. PG 11. I'm not sure there's sufficient evidence to say the FN lead "to the minimized scar formation"

Minor:

1. 'PFO' typo in figure 1 legend
2. Figure S5 - I assume fibroblasts are not 'throughout' the suture (i.e., internally as well as externally)
3. Double check the figures - I think there's some mixup on colors for graphs and inconsistently used colors for the groups (e.g. 2b)

Reviewer #2: This study reports the surface modification of absorbable sutures with fibronectin for promoting wound healing and reducing the adhesion of bacteria. Authors performed a series of characterizations including surface chemical composition analysis, mechanical property, biocompatibility, cell migration assay, and in vivo testing. However, there are some concerns which need to be addressed.

1. There are many grammar errors in the manuscript. The manuscript needs to be revised thoroughly in terms of language. In addition, ref. 8 should be provided.
2. Authors mentioned fibrous fibronectin coating. High magnification of SEM images should be provided to verify the fibrous morphology.
3. Although the FN coating could reduce the binding to *S. aureus*, after administration in vivo, the surface of surgical sutures could be readily varied. The prevention of infection or reduction of infection rate should be verified in vivo.
4. Figure 3. The collagen deposition could be due to the foreign body reaction.
5. Figure 3. Inflammatory cytokines should be characterized.

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Dr. Irem Bayindir-Buchhalter, Editor  
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\*\*\*\*\*

Kwanwoo Shin  
Professor & Director

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 **Revision\_Due.ics**  
1K

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**FW: Action: Proof of ADHM\_EV\_ADHM202001686 for Advanced HealthcareMaterials ready for review**

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**Kwanwoo Shin** <kwshin@sogang.ac.kr>  
To: Agustina Setiawati <nina.lifesci@gmail.com>

Wed, Jan 13, 2021 at 9:54 PM

\*\*\*\*\*

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Professor & Director

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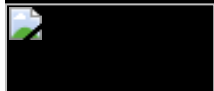
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보낸 날짜: 2021년 1월 13일 수요일 오전 1:59

받는 사람: [kwshin@sogang.ac.kr](mailto:kwshin@sogang.ac.kr)

제목: Action: Proof of ADHM\_EV\_ADHM202001686 for Advanced HealthcareMaterials ready for review



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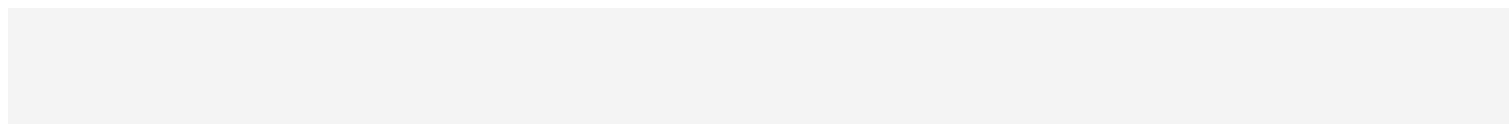
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Best regards,  
**Herth, Christine**

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**FW: Acceptance of your submission to Advanced Healthcare Materials(adhm.202001686R2) - [EMID:8527c51f32ee9820]**

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**Kwanwoo Shin** <kwshin@sogang.ac.kr>

Tue, Jan 5, 2021 at 2:39 AM

To: Agustina Setiawati &lt;nina.lifesci@gmail.com&gt;, 정광환 &lt;kjung@sogang.ac.kr&gt;, bgju &lt;bgju@sogang.ac.kr&gt;, "whjung@cau.ac" &lt;whjung@cau.ac&gt;

Prof. Jung, Jung and Ju.

This paper has been accepted. Thank you for your support.

KS.

\*\*\*\*\*

Kwanwoo Shin  
Professor & Director

Department of Chemistry &amp; Institute of Biological Interfaces, Sogang University,

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**보낸 사람:** [Advanced Healthcare Materials](#)**보낸 날짜:** 2021년 1월 4일 월요일 오전 10:47**받는 사람:** [Kwanwoo Shin](#)**제목:** Acceptance of your submission to Advanced Healthcare Materials(adhm.202001686R2) - [EMID:8527c51f32ee9820]

Dear Prof. Shin,

Thank you for submitting your manuscript entitled "An accelerated wound healing surgical suture engineered with an extracellular matrix" (Communication, No. adhm.202001686R2) to Advanced Healthcare Materials.

I'm pleased to inform you that your manuscript has been accepted for publication without change.

\*\*\*\* Please add the significance symbol to Fig 4 and the statistical analysis information to its legend during proofs stage.

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Irem Bayindir-Buchhalter

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Dr. Irem Bayindir-Buchhalter, Editor

Advanced Healthcare Materials

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