

Reviewer #1:

Scientific Quality: Grade C (Good)

Language Quality: Grade B (Minor language polishing)

Conclusion: Minor revision

Specific Comments to Authors: [In brief, my comments were related to this being a 'Letter to the Editor' style manuscript, and thus, should offer more insights and further the discussion presented in the manuscript the authors are commenting on. The abstract should not include references, the Figure has a white space that could very easily be filled by the topic the authors fail to touch on: biomaterials and tissue engineering advancements for bile duct replacements. Indeed, a discussion around this alternative route for regenerating bile duct tissues could provide 'meet-in-the-middle' approach from the surgical, physiologists, and engineers perspectives. I suggest the authors to carefully read the literature around such topics to bolster their discussion and offer further insights into strategies moving forward.]

Responses for reviewer comments:

- 1) **Reference** in the Abstract: Because this Letter-to-the-Editor related to the article by Miyazawa et al. (2022), we left a mention of his article. We removed the year from the article so it wouldn't look like a reference.
- 2) **The figure was updated:** We strongly believe that the materials themselves are not that important, as there are a significant number of ways to modify their physical and chemical properties. Therefore, the figure has been added by section (D) with a listing of techniques to modify the rheological and biocompatible properties of the bile duct substitutes.
- 3) **Two new ideas have been added to the manuscript:** an example of using a physical approach to design a bile duct substitute (phase space method), and ideas about division of labor and inter-tissue competition from the recent paper by Adler et al. (2023).

Reviewer #2:

Scientific Quality: Grade B (Very good)

Language Quality: Grade B (Minor language polishing)

Conclusion: Minor revision

Specific Comments to Authors: The authors submitted a letter to the editor discussing the challenges and potential solutions in creating bile duct substitutes for biliary reconstruction in abdominal surgery. Research and development of artificial biliary substitutes is an indispensable part of modern biliary surgery, bearing great clinical significance on the recovery of the normal functions of the biliary system. Although research has been conducted for over 100 years to directly repair bile duct defects with alternatives, no bile duct substitute has been developed. The implantation of artificial biliary substitutes may cause the blockage or stenosis of the biliary duct at the transplantation site, which is the most urgent problem in the research of artificial biliary substitutes. The authors suggest that a systematic analysis of factors leading to success or failure in creating bile duct substitutes, quantitative models to estimate outcomes, and the use of endogenous regeneration abilities of the organism may help in developing more effective approaches. They emphasize the need for an interdisciplinary approach, including quantitative methods and retrospective analysis, to pave the way for bile duct restoration with physiologically relevant outcomes. Overall, this manuscript is better designed, written, and the logic is clear. Individual English errors need to be corrected.

Responses for reviewer comments:

Thank you for your detailed review. The English in the manuscript has been significantly improved and all the mistakes have been corrected.