Meta Review

This manuscript was automatically generated from greenelab/meta-review@08dd3a3 on August 1, 2017.

Authors

- **Daniel S. Himmelstein**

  0000-0002-3012-7446 · dhimmel · dhimmel

  Department of Systems Pharmacology and Translational Therapeutics, University of Pennsylvania · Funded by GBMF4552

- **Casey S. Greene**

  0000-0001-8713-9213 · cgreene · GreeneScientist

  Department of Systems Pharmacology and Translational Therapeutics, University of Pennsylvania · Funded by GBMF4552

- **Anthony Gitter**

  0000-0002-5324-9833 · agitter · anthonygitter

  Department of Biostatistics and Medical Informatics, University of Wisconsin-Madison and Morgridge Institute for Research · Funded by NIH U54AI117924

Abstract

Offspring of the Deep Review. We cite the Deep Review like [1] or [1]. The source repository is [2].

Main text

Introduction

Open research – which includes sharing code, data, and manuscripts – benefits the researchers who engage in open practices [3], their scientific peers, and the public. `TODO: more references needed` Here we describe the benefits of writing review articles openly, where the planning, organizing, writing, and editing occur collaboratively in a public forum where participants are free to join as they wish. Reviews presenting the state of the art in a scientific field are often prepared by a single research group or a small team of colleagues. In contrast, broadly opening the writing process to anyone engaged in the topic can help maximize the review's value by facilitating the representation of diverse opinions and the broad coverage of relevant research. Review authors can engage with the authors of original research to clarify their methods and results and present them accurately (for example, [4]). `TODO: need archival issue link` In addition, discussing manuscripts in the open provides one form of pre- and post-publication peer review `TODO: define this or provide a reference?`, incentivizing the reviews with potential manuscript authorship. However, inviting wide authorship brings many technical and social challenges such as how to fairly distribute credit, coordinate the scientific content, and collaboratively manage extensive reference lists.

We present potential solutions to these challenges based on our recent experience leading a collaborative review "Opportunities And Obstacles For Deep Learning In Biology And Medicine" [1]. Our review attracted 27 authors from 20 different institutions who were not determined in advance. `TODO: confirm institution count` We wrote entirely in the open without restrictions on who was welcome to contribute. Although we requested that some authors participate for their specific expertise, most discovered the manuscript organically through conferences or social media and independently decided to contribute. `TODO: confirm "most"` To coordinate this effort, we developed a manuscript writing process using the Markdown language, the GitHub software development platform [5], and our new Manubot tool [2,6] for automating manuscript generation.

Acknowledgements

`TODO: deep review authors for support in testing this process`
`TODO: manubot-rootstock contributors`

References

1. Ching T *et al.* 2017 Opportunities And Obstacles For Deep Learning In Biology And Medicine. See https://doi.org/10.1101/142760.

2. Himmelstein D. 2017 greenelab/manubot-rootstock GitHub repository. *GitHub*. See https://github.com/greenelab/manubot-rootstock.

3. McKiernan EC *et al.* 2016 How open science helps researchers succeed. *eLife* **5**. See https://doi.org/10.7554/elife.16800.

4. greenelab. In press. The cornucopia of meaningful leads: Applying deep adversarial autoencoders for new molecule development in oncology · Issue #213 · greenelab/deep-review. *GitHub*. See https://github.com/greenelab/deep-review/issues/213.

5. greenelab. In press. greenelab/deep-review. *GitHub*. See https://github.com/greenelab/deep-review.

6. dhimmel. In press. greenelab/manubot. *GitHub*. See https://github.com/greenelab/manubot.