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Editorial Open Access

Open Access (OA) and the Heritage of Research Reproducibility

Yue Zhang*

Montreal University Hospital Center, Montreal, Quebec, Canada

Medical science is troubled by questions of economics, and we see a trend towards hidden conflicts of interest (COI) [1], and/or irreproducibility [2]. Traditional subscription journals represent the standard and have better COI control [1], but the sooner they move into OA, the better. If our heritage of reproducibility risks to end, we will need stronger systems to maintain this heritage, with a need for formal external incentives and regulations. The policy of copyright law and intellectual property crediting system should align with OA. Law has a debt to science. Authors have to abide by them to ensure high quality, ethics and scientific rigor for primary research publications. Funding agencies may make this mandatory, or a "sting" could be carried out at the discretion of reviewers or editors. Obviously, extended experiment verification is expensive.

To reduce the burden of verification, the tradition of reproducibility should be prompted and rely on spontaneous experiments plus OA crowd-sourcing model, rather than external verification. Auto-links could be developed that flag each element for OA publications, if sufficient confirmatory publications are found. This would encourage authors to include links to underlying data in previous publications, wherever necessary. The author(s) could provide links to single elements that demonstrate their past expertise to assure reproducibility. Any new OA must be expanded in sufficient detail for reproducibility, alongside new results for all components (figures, tables, datasets, etc.), at appropriate points in the article. Each will be considered as individual elements and assigned a unique identifier (DOI), so that readers may discuss, identify and verify each part separately. This is compatible with new concepts, such as article of built-up from modules, or the initial hypothesis publication, being followed-up with experiments as updated, as well as tolerance of publishing "imperfect" story with gaps [3]. The most flagged articles will be considered the most reliable.

Reproducibility is the heart of any primary research publication. The mentor-student lineage is critical in scientific communities, which is the matrix where researchers can share details of their knowledge, techniques, hypotheses and designs–and problems. If a particular discovery is significant, other community members could confirm and build on it with vigorous and independent testing. Several strands of "reproducibility" (reproducibility and career success) follow the heritage of members and labs in many communities, typically *Caenorhabditis elegans* community. This would create a win–win culture: "my data are your data" [4] "your success is my success." Community members have a default way to assign credit for sharing. Without these ethical highlights, some investigators risk, producing imperfect research.

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***Corresponding author:** Yue Zhang, Senior Scientist, Montreal University Hospital Center, Montreal, Quebec, Canada, E-mail: zy1001@yahoo.com

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