

An Integrative Approach Towards Sustainability of Biobanks

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Short Communication

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ABSTRACT

Biobanks play a key role in modern biomedical research. However, operating a biobank often requires continuous commitment of a large amount of resources, raising the issue of how to sustain an operational biobank. Using the Taiwan Biobank as an example, an integrative approach is introduced in this commentary which may serve as a first step towards solving the sustainability issue of biobanks. Biobanks have become an indispensable infrastructure for translating biomedical research and health data into practical solutions in the field of precision medicine. Although the benefits to science and society are great, operating a biobank requires substantial resources and many biobanks are reliant on funding from private non-profit and public sources. Some biobanks have shut down because of insufficient funds, and the goal of “sustainable management” remains a critical challenge for biobanks around the world. Using the Taiwan Biobank as an example and taking the management of other biobanks worldwide into consideration, propose a four-pronged approach as a potential means towards ensuring biobank sustainability.

INTRODUCTION

Biobanks have become an indispensable infrastructure for translating biomedical research and health data into practical solutions in the field of precision medicine [1]. Although the benefits to science and society are great, operating a biobank requires substantial resources and many biobanks are reliant on funding from private non-profit and public sources. Some biobanks have shut down because of insufficient funds, and the goal of “sustainable management” remains a critical challenge for biobanks around the world [2]. Using the Taiwan Biobank as an example and taking the management of other biobanks worldwide into consideration, propose a four-pronged approach as a potential means towards ensuring biobank sustainability.

DISCUSSION

The four “prongs” include vertical integration of Taiwan Biobank data to provide customized value-added services to stakeholders, horizontal integration with other Taiwanese biobanks as part of the National Biobank Consortium of Taiwan (NBCT) spearheaded by the National Health Research Institutes (NHRI), establishing long-term dynamic relationships with participants and users, and incorporating novel data utilization modalities such as big data analysis and artificial intelligence for better management and knowledge generation [3]. It is argued that these directions may help establish sustainable financial strategies that “may find a balance between the public welfare and business applications”, with one of the major goals being a more active corporate participation in the biobanking enterprise.

The article heavily draws on the experiences of other national-level biobanks, particularly the UK Biobank and the All of Us initiative of the US. However, both the UK and US government agencies are active partners of their respective biobanks [4]. In contrast, Taiwanese authorities play more of a regulatory role in biobank management. For example, the National Health Service (NHS) of the UK provided the demographic contact details to the UK Biobank for its recruitment phase, and currently provides regular health record updates of the participants to link with the UK Biobank data sets. The All of Us program of the US goes one step further: it is initiated and executed by the National Institutes of Health, a federal agency with broad powers of research governance [5]. The four-pronged approach proposed in the article involves many regulatory challenges; changing the mindset of Taiwanese authorities to act as an “active player” instead of a “regulator” of biobanks shall likely remain the single major challenge for it to be successful.

CONCLUSION

On the other hand, the four directions outlined cover an expansive breadth of sustainability issues of biobanks worldwide. The Taiwan biobanking landscape is a complex mixture of fragmented biobanks and a single large centralized biobank. The NBCT is essentially the Taiwanese counterpart of the European BBMRI-ERIC initiative [10], and the Taiwan Biobank was originally conceived as a national-level infrastructure. The directions outlined in the article may thus be applicable to a variety of biobanking scenarios and may serve as a starting point for solving the problem of strategically sustaining a biobank system.

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