Applying “R” strategies to foster environmental sustainable practices in biobanking

Authors:

Monika Valjan[1], Veronika Perz[1], Sabrina Kral[1]

1 Biobank Graz, Medical University of Graz, Austria

Introduction:

Biobanking generally is sustainable due to highly organized centralized logistics, storage, and retrieval of samples. Additionally, it fosters collaboration between institutions and industries, reducing research duplication, optimizing resources and maximizing sample utility. Nevertheless, it is important to acknowledge, that biobanks require substantial amounts of energy and other resources. “R” strategies (1) can help to explore environmental sustainability measures in biobanking.

Material & Methods:

We adapted the framework proposed by Zorpas (1) including up to 100 potential R`s strategies, focusing on reducing, rethinking, reusing, recycling, repairing and recovering to find suitable sustainability measures. Through an intensive literature review and analysis of Biobank Graz, a partner of BBMRI.at, we identified several actionable improvements.

Results:

By applying the 'R' strategies to Biobank Graz processes, we have identified several measures for improvement. These include reusing materials, such as unsuitable or outdated consumables for sample transport, reducing our carbon footprint through the transition to renewable energy and overall power consumption reduction, rethinking the use of refrigerants with high global warming potential, and maximizing consumable recycling.

Discussion and conclusion:

Implementing these “R” strategies help to find sustainability measures in your biobank and save energy, resources and costs. Biobanks and related institutions can make significant strides toward sustainability, benefiting both the environment and operational efficiency.

Bibliography:

1. Zorpas AA. The hidden concept and the beauty of multiple “R” in the framework of waste strategies development reflecting to circular economy principles. Science of the Total Environment. 2024 Nov 20;952.